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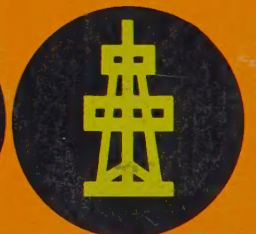
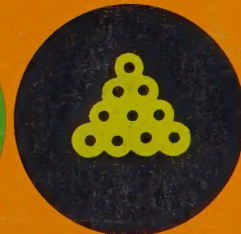



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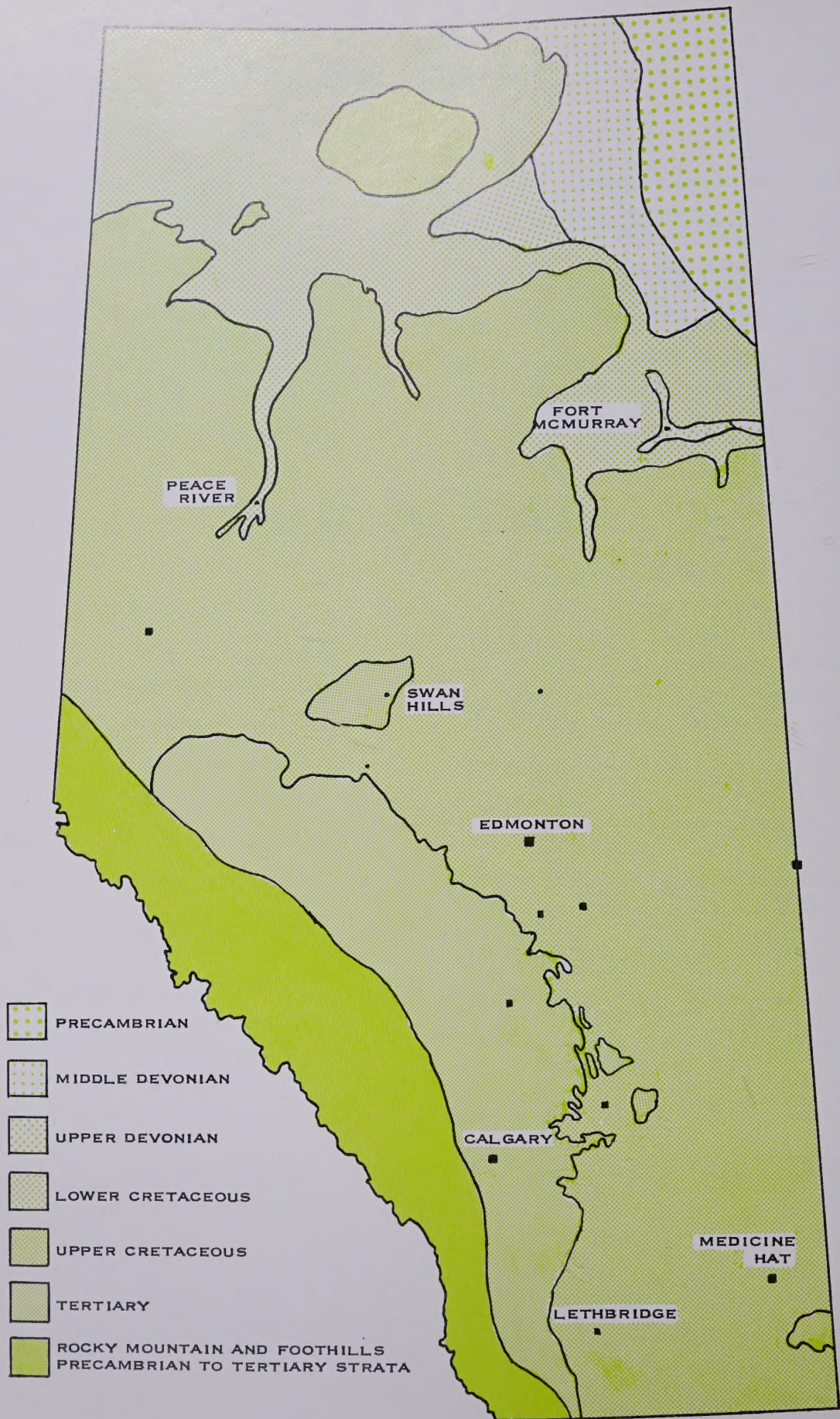
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SURFACE OUTCROP SHOWING GEOLOGICAL AGE

GEOGRAPHY

Alberta, on the northwestern rim of the central plains of North America, takes in an area of 255,285 square miles, 248,800 being land and the balance fresh water. From the 49th parallel of latitude, the province extends 756 miles north to the 60th parallel. The province lies between 110° and 114° west longitude on the south, about 182 miles; and between the 110th and 120th meridians on the north. Maximum width is 404 miles, close to the 54th parallel of latitude.

The province rises from northeast to southwest. Altitude varies from 700 feet at Lake Athabasca to 4,000 feet along the foothills, and rises sharply to heights of over 10,000 feet above sea level in the mountains.

Broadly, the province comprises three geographic-economic regions based on diverse geographic features and soils. North from the international boundary for a distance of roughly 200 miles, the land is a relatively dry, treeless, gently rolling prairie. Drainage is by the St. Mary's, Bow, and Red Deer rivers. Semi-arid conditions prevail in the south and east of this region. It is a dry farming area where grains have been substituted for natural grasses. Brown and dark brown soils predominate. These soils are second in productivity to the black soils, although more productive than the grey-wooded soils.

The southeastern portion of Alberta and the southwestern portion of Saskatchewan together have been called the Palliser Triangle. This area, with its northern apex near Hanna, Alberta, and its Canada base along the American border, is characterized by short grass and low rainfall. Though capable of raising excellent crops in good years, rainfall is so uncertain that the area is reverting to its natural aptitude: ranching.

A large part of southern Alberta is well suited for irrigation. This semi-arid part of the province is traversed by the six largest tributaries of the South Saskatchewan River; and the topography of the region makes possible the construction, at relatively low cost, of storage reservoirs. The streams are fed by mountain snows and glaciers that provide water in quantity when required throughout the summer months.

North from a Red Deer-Stettler line, the prairies shade into the mixed forests of central Alberta. This pleasant parkland region, with its succession of wide ridges and broad valleys, interspersed with lakes and streams, is drained by the North Saskatchewan River system. Large areas are well adapted to grain growing and mixed farming. Black soils predominate. Both this region and southern Alberta are a part of the Hudson's Bay drainage basin.

The northern half of the province is part of the Arctic drainage basin. It is a region of great rivers, lakes and forests broken by tracts of open prairie like the Grande Prairie district and the wide sweeping terrain of the Peace River Valley. The Mackenzie River system, which in Alberta includes the Peace, the Athabasca, and the Hay rivers, dominates the region. Mixed farming, often of a frontier type, prevails in the south and west of the area, but lumbering is also of major significance. Grey-wooded soils predominate.

The northern portion of the province is Precambrian rock of the Canadian Shield, and comprises about three per cent of the total land area.

Alberta has the most varied landscape of any Canadian province. The most prominent topographic feature is the range of Rocky Mountains. Within this mountain region are three of Canada's most celebrated national parks — Jasper, Banff, and Waterton Lakes. The Columbia Ice Field lies astride the British Columbia-Alberta boundary at the division between Banff and Jasper National Parks. Melting waters of the ice field flow north to the Arctic Ocean, west into the Pacific Ocean, and east to Hudson's Bay.

There are five practicable passes through the Alberta section of the Rockies; the lowest of these, the Yellowhead, is 3,700 feet and the highest, the Vermilion, is 5,400 feet above sea level. The others are the Crowsnest at 4,500 feet; the Howse at 5,000 feet and the Kicking Horse at 5,300 feet.

The foothills, lying between the mountains and the plains area, cover about five per cent of the province. Although distinct from the plains, the line of demarcation between the two is not sharply drawn. The country slowly becomes more rolling, the round-topped hills rise higher and higher and become increasingly steeper. The foothills are then transformed into the jagged, precipitous Rockies.

The plains area is broken by some ranges of prominent hills which, in a few cases, rise to altitudes of 4,000 feet. Outstanding among these are the Swan Hills in central Alberta and the Cypress Hills in the southeast corner. Other examples are Marten Mountain, Caribou Mountains, Clear Hills, Buffalo Head Hills and Birch Mountains. These features generally rise 1,000 to 2,000 feet above the level of the surrounding terrain.

Deeply incised river valleys are marked features. For instance, the Peace River, has worn a spectacular valley; wide and deep. The Red Deer River has cut out a mile wide valley to a depth of nearly 400 feet below the surrounding prairie. In this valley are the "badlands". In addition to their weird topography, the badlands are a veritable storehouse of fossils of Devonian age.

Several commercially significant lakes, as well as countless smaller lakes, dot the landscape. Important lakes include Lake Athabasca, important as a transportation route as well as for commercial fishing, and Lesser Slave Lake and Cold Lake with their important commercial fisheries. Other lakes, particularly those in the heavily populated areas, are very popular recreation areas.

While the pattern of settlement in other provinces has been in an east-west pattern along their southern boundaries, Alberta's settlement has been on a north-south axis. The northern section, unlike most other provinces, is largely free of the rocky Precambrian Shield. Virtually all of the province is capable of agricultural development of one form or another and land will likely be taken up as required. Those areas not presently capable of agricultural development attract settlement because of other factors, including their forest cover, or underground resources.

The snow-capped mountains and the rolling foothills, the hospitable parklands and the expansive prairies, the rocky Canadian Shield and the abundant forests combine into a dynamic and beautiful province.

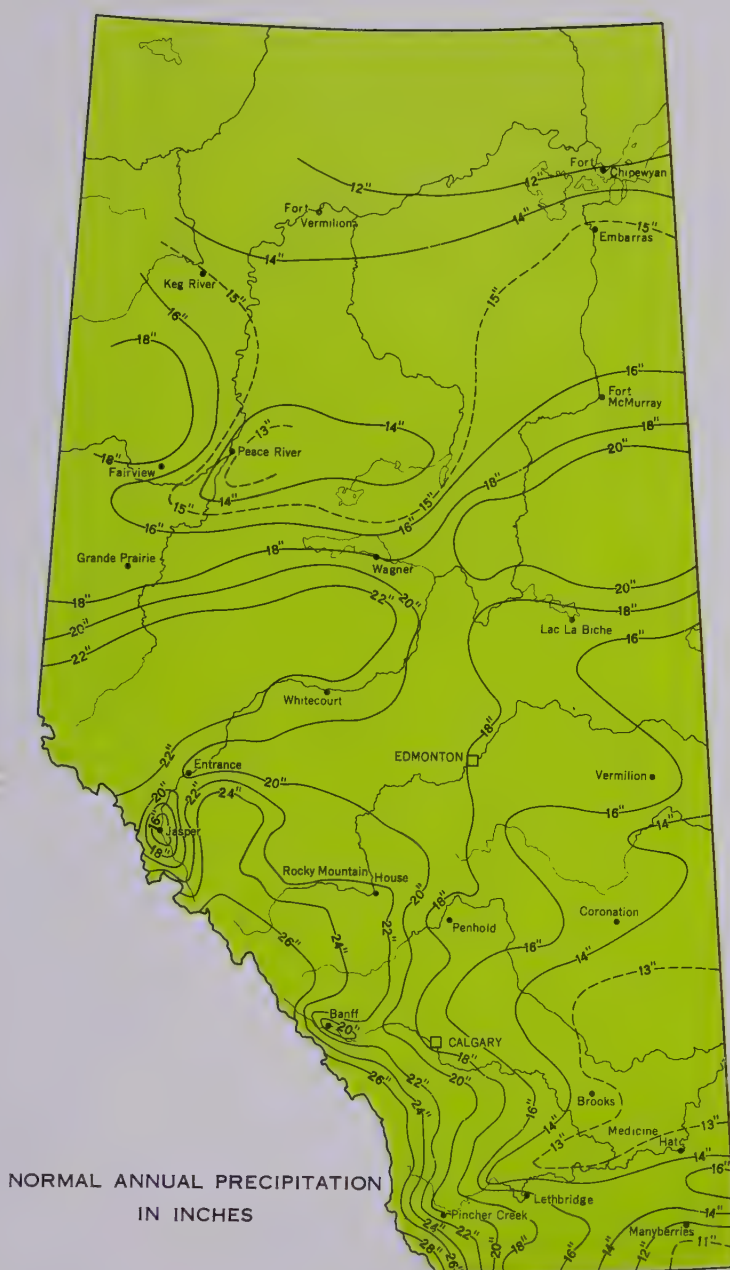
CLIMATE

Alberta has the greatest number of hours of bright sunshine of all the provinces -- 2,000 to 2,200 annually. The climate of Alberta is predominantly continental and as such is subject to significant extremes in weather. As air from the west rushes down the eastern mountain slopes it is warmed, and the cold air from the north is deflected eastward. The climate is also affected by the low relative humidity which moderates both the high temperatures of summer and the low temperatures of winter.

Alberta, in the rain shadow of the Rocky Mountains, is relatively dry. Average annual precipitation ranges from 11 to 28 inches. The accompanying map shows marked variations. Precipitation is greatest along the foothills, diminishing rather rapidly toward the north, and is fairly heavy in a band from Jasper Park to Lac La Biche. This heavier precipitation is associated with the higher ground, most of which is heavily forested, and which separates the Arctic Ocean drainage basin from the Hudson's Bay drainage basin.

Rainfall is adequate over all of Alberta except the southeast area. The problem of aridity has been solved satisfactorily in parts of this region by irrigation. The seasonal pattern of precipitation favours the farmer in that about 50 per cent normally falls in the April to July period -- the growing season. Snowfall accounts for only 25 per cent of the total annual precipitation.

The southeast part of the province has an average annual precipitation of only about 12 inches, and high evaporation rates partly caused by frequent hot dry winds. In the west central part the annual precipitation approximates 20 inches; temperatures are



... , evaporation rates and the growing season shorter. In the extreme north, as in the south, precipitation is about 12 inches per year, but temperatures are much cooler and evaporation rates low.

Generally, the more prolonged and widespread rains are caused by relatively warm moisture laden maritime air from the Pacific crossing the mountains and converging with the drier, cooler continental air from the north. This Pacific air is relatively unsaturated after crossing the mountain barrier and is lifted by the Polar air which, because it is cold and dense, flows underneath. On rising, the Pacific air becomes chilled and its moisture content then falls as rain. Some heavy rains in the south and east portion of the province may be due to a similar confluence of the warm, moist air from the Mississippi Basin and the cold Polar air.

The wind pattern over Alberta is complex. The mountains provide a steering and blocking effect. Winds may vary markedly in speed and direction over short distances. Over most of the settled areas the prevailing winds are westerly.

A famous wind in Alberta is the Chinook. The expression is properly used for the strong warm winds which blow eastward over the mountains. The Chinook blows most often in southwestern Alberta but areas in, or adjacent to, the foothills are often affected all the way from Calgary to the Peace River country. The air involved originates over the Pacific and is mild relative to that over the prairies during the winter. This mild air gains heat by compression as it comes down the eastern mountain slopes. Relatively strong winds aloft are required to force the mild air into descent over the prairies, or out of the mountain valleys from British Columbia. The Chinook then bursts forth -- typically near a valley such as the Crowsnest Pass of southwestern Alberta -- and fans out eastward. The velocity of Chinooks range from 25 to 50 miles per hour with gusts to over 100 miles per hour. The Chinook weakens rather rapidly about 100 miles from the mountains, although the mild air



may be carried farther east. Chinooks have their greatest frequency during the fall, winter and spring.

Within the province there is considerable variation in climate. Generally, at the same latitude, western Alberta tends to be warmer than the eastern portions and there are considerable variations in the north - south direction. In the winter the temperature gradient from south to north is steep but in the summer it is very slight. Thus summer temperatures are not as limiting to growing conditions in northern areas as the latitude might indicate.

"Degree-days", (a term obtained by assigning to any day a value equal to the number of degrees by which the mean temperature is below 65°F.) is often used by engineers to measure heating requirements. Using this standard, heating requirements are not exceptionally high. "Degree-days" per year rise from about 8,000 in southwest Alberta to 15,000 in the northeast corner. Fuel needs in the main settled areas are above those of southern British Columbia, but below those of Saskatchewan and Manitoba. Fuel costs are much lower than in any other province. Southern Alberta costs for fuel needs compare with those for southwest Quebec and eastern Ontario.

Monthly mean temperatures are above 50°F. for the five months May to September in most parts. Temperatures rise rapidly in April and fall rapidly in October. The peak heat period of summer is near the end of July, with typical highs of 85°F. in the south and 75°F. in the north.

Although average weather conditions are favourable, extreme deviations are so frequent that the production of crops becomes uncertain. Late spring and early fall frosts increase the risks in the northern and western areas. Fortunately the drought hazard is less in these areas. Spring frosts do not limit agriculture to the same extent as do early fall frosts. When ripening is delayed, fall frosts can be disastrous. Early seeding, and the use of phosphatic fertilizers hasten maturity, reducing the incidence of frost damage.

The mean frost-free period becomes shorter northward and westward from Medicine Hat and depends somewhat on topography. The Peace River country, for instance, enjoys a longer frost-free period than the surrounding areas. Low spots in the foothills or in northern areas may have frost in any month.

An indication of the suitability of Alberta's climate for agriculture is the fact that permanent agricultural settlement reaches its farthest northern point in Canada in the Peace River district. The favourable combination of long hours of sunlight, a sufficient number of frost-free days and adequate precipitation permit this situation.



Annual total value of Alberta's lumber production is in excess of \$16,000,000.

Table 1

STANDARD 30 YEAR (1931-1960) NORMALS OF TEMPERATURE, PRECIPITATION, AND FROST DATA, ALBERTA WEATHER STATIONS

Station	Elevation (feet)	TEMPERATURE (DEGREES FAHRENHEIT)						PRECIPITATION (INCHES)						FROST DATA					
		January			July			Mean Annual			Period (yrs)			Date			Frost-Free Period		
		Highest		Max.	Mean Daily		Max.	Snowfall		Mean	Frost Data		Mean	Last in		Mean	Longest		Shortest
		Lowest	Lowest	Min.	Min.	Max.	Min.	April	May	June	Collection	Spring	Spring	Fall	Spring	(days)	(days)	(days)	(days)
1	2585	-64	104	23	-5	80	47	57.5	1.08	1.57	2.88	2.52	43	June 5	Aug. 26	82	124	*	1
2	4495	-47	99	22	4	74	44	64.3	1.59	1.95	2.88	1.63	22	June 24	Aug. 23	60	106	*	2
3	1690	-61	101	12	-9	77	44	50.2	.82	1.80	2.77	3.00	20	June 19	Aug. 17	59	87	*	3
4	4583	-60	94	22	-4	73	44	79.3	1.38	1.77	2.45	1.67	54	June 4	Aug. 16	54	96	*	4
5	2625	-	-	-	-	-	-	-	-	-	-	-	19	May 20	Sept. 18	121	159	71	5
6	2500	-54	98	16	-1	72	48	68.1	.83	1.60	2.22	2.52	16	May 30	Sept. 1	94	140	*	6
7	4218	-50	98	27	7	76	44	122.6	2.15	2.44	3.70	1.41	16	June 16	Aug. 10	55	81	*	7
8	2148	-51	82	6	-12	73	48	82.3	.55	1.23	2.36	2.74	2	June 1	Aug. 28	88	-	-	8
9	3700	-	-	-	-	-	-	-	-	-	-	-	8	May 27	Sept. 7	103	132	70	9
10	2487	-50	104	20	-3	82	52	40.7	.85	1.61	2.26	1.49	34	May 22	Sept. 19	120	161	86	10
11	1100	-64	98	1	-15	74	49	48.2	.57	1.49	2.06	2.41	17	June 13	Aug. 25	73	97	35	11
12	Caldwell	-40	98	26	10	77	48	126.3	2.56	2.90	4.21	1.56	-	-	-	-	-	-	12
13	Calendula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
14	3540	-49	97	24	-4	75	49	58.5	1.36	2.03	3.45	2.30	30	May 27	Sept. 11	109	154	52	14
15	2200	-57	98	17	-6	75	48	50.4	1.16	2.06	3.21	3.43	35	June 8	Aug. 27	80	138	36	15
16	2200	-61	100	15	-7	74	47	49.5	.96	1.84	3.10	3.73	38	June 18	Aug. 22	65	94	*	16
17	2215	-58	101	14	-7	75	50	38.0	.99	1.58	2.53	2.74	20	June 5	Sept. 5	92	135	68	17
18	3826	-46	102	28	9	79	50	65.4	1.39	2.38	3.59	1.62	35	May 30	Sept. 10	103	150	57	18
19	3500	-	-	-	-	-	-	-	-	-	-	-	8	May 23	Sept. 1	101	131	83	19
20	Carway (Twin Lakes)	-46	98	29	10	75	50	95.1	1.80	2.42	3.61	1.56	32	June 7	Sept. 4	89	149	41	20
21	3390	-	-	-	-	-	-	65.7	1.35	1.73	2.65	1.29	17	June 1	Sept. 3	94	123	31	21
22	3850	-	-	-	-	-	-	-	-	-	-	-	17	July 13	July 19	6	*	*	22
23	Cold Lake	-55	97	7	-11	73	52	58.1	1.06	1.41	3.29	3.49	-	-	-	-	-	-	23
24	Coleman	-	-	-	-	-	-	87.0	1.56	2.02	2.53	1.25	-	-	-	-	-	-	24
25	2618	-48	100	13	-3	76	52	44.3	1.01	1.00	2.21	2.64	24	June 1	Sept. 3	94	137	*	25
26	3878	-47	99	28	6	76	47	86.4	1.43	2.32	3.28	1.55	12	June 9	Aug. 29	81	136	50	26
27	2255	-	-	-	-	-	-	-	.86	1.30	2.37	2.00	17	May 23	Sept. 10	110	147	71	27
28	Dunvegan	-	-	-	-	-	-	80.3	.66	.96	2.49	2.37	36	June 9	Aug. 27	79	111	*	28
29	Edmonton (International)	-46	95	13	-4	73	50	52.9	1.06	1.68	3.36	3.21	-	-	-	-	-	-	29
30	Edmonton (Municipal)	-57	99	15	-2	74	52	18.64	1.10	1.83	3.15	3.34	-	-	-	-	-	-	30
31	Edmonton (Namao)	-36	93	12	-1	73	52	56.0	1.14	1.68	3.30	2.93	60	May 29	Sept. 6	100	144	44	31
32	Edson	-55	100	19	-2	73	44	58.7	1.06	2.05	3.59	3.66	35	June 1	Aug. 19	59	127	*	32
33	Elk Point (Glendon)	-64	102	9	-11	75	48	44.3	.86	1.36	2.91	2.77	32	June 15	Aug. 18	64	103	*	33
34	Elmworth	-70	95	18	-7	74	44	63.0	.89	1.28	1.97	2.59	24	June 21	Aug. 11	51	88	*	34
35	Embaras Airport	-63	93	1	-18	75	51	51.9	1.66	1.32	1.72	2.21	8	June 14	Aug. 30	77	94	54	35
36	Empress	-	-	-	-	-	-	-	-	-	-	-	12	May 25	Sept. 15	113	144	86	36
37	Entrance	-60	100	24	1	74	43	55.7	1.22	2.10	3.59	2.72	32	June 29	Aug. 10	42	75	*	37
38	Exshaw	-	-	-	-	-	-	76.1	1.63	2.54	3.41	2.02	17	May 31	Sept. 13	105	147	52	38
39	Fairview	-49	97	11	-6	72	49	73.7	.91	1.43	2.33	2.55	19	May 25	Sept. 7	109	139	78	39
40	Five Lakes	-	-	-	-	-	-	-	-	-	-	-	11	May 27	Sept. 12	108	132	91	40
41	Foremost	-	106	-	-	83	52	-	.90	1.59	2.82	1.36	22	May 17	Sept. 17	123	153	56	41
42	Fort Chipewyan	-60	93	-4	-20	75	51	135.7	1.15	3.47	1.59	1.93	39	June 10	Aug. 23	74	118	*	42
43	Fort MacLeod	-47	110	27	9	81	53	52.9	1.28	2.39	3.60	1.67	53	June 21	Sept. 16	118	165	49	43
44	Fort Vermilion	-78	103	0	-19	75	49	50.9	.55	1.34	1.83	2.21	41	June 13	Aug. 17	65	104	*	44
45	Gem	-	-	-	-	-	-	-	-	-	-	-	20	May 31	Sept. 3	95	118	70	45
46	Glassford	-	-	-	-	-	-	-	-	-	-	-	8	June 2	Aug. 27	86	124	39	46
47	Gleichen	-53	103	21	-1	78	50	47.4	1.16	1.70	2.70	2.02	45	May 29	Sept. 9	101	152	51	47
48	Goodfare	-	-	-	-	-	-	73.0	.60	1.80	2.45	3.13	-	-	-	-	-	-	48
49	Grande Prairie (Airport)	-62	94	12	-6	72	49	65.5	.71	1.57	2.47	2.38	9	May 23	Sept. 4	104	141	81	49
50	Groton	-	-	-	-	-	-	44.6	1.00	1.41	2.49	1.40	28	June 9	Aug. 26	78	118	*	50
51	Grouard	-60	98	13	-7	74	48	58.0	.71	1.67	2.96	2.42	25	June 25	Sept. 5	103	149	68	52
52	Hama	-50	102	16	-2	78	52	41.5	.86	1.28	2.49	2.27	4	June 9	Aug. 12	64	-	-	53
53	Hardisty	-	-	-	-	-	-	29.2	.86	1.13	2.48	2.95	28	June 28	Aug. 3	36	91	*	54
54	Harmattan	-	-	-	-	-	-	41.9	.79	1.57	3.34	3.13	20	June 16	Aug. 16	61	93	*	55
55	Heldar	-	-	-	-	-	-	54.7	.93	1.51	2.73	2.91	20	June 8	Aug. 28	81	116	54	56
56	High Prairie	-60	97	12	-7	74	48	18.00	.79	1.57	2.47	2.38	39	June 15	Aug. 12	58	108	*	57
57	High River	-49	89	28	4	76	45	68.7	1.77	2.17	3.57	2.08	46	June 2	Aug. 30	89	130	49	58
58	Hillsdown	-52	101	20	-3	73	48	56.5	1.49	2.04	3.67	2.95	16	June 4	Sept. 7	95	135	39	59
59	Hillspring (Caldwell)	-	-	-	-	-	-	-	-	-	-	-	10	June 3	Sept. 2	91	131	*	60
60	Hughenden	-59	104	13	-7	79	50	38.3	.90	1.27	2.44	2.43	-	-	-	-	-	-	-

61	Iron River	1900	- 60	97	11	-11	75	48	14, 61	38, 7	.75	1.41	2.75	2.28	22	June 13	Aug. 20	68	101	61
62	Jasper	3480	- 52	98	21	2	74	45	15, 98	49, 2	.73	1.31	2.15	1.96	33	June 12	Aug. 24	73	128	62
63	Jenner	2480	- 56	105	17	- 5	83	50	12, 49	36, 4	.73	1.44	1.97	1.22	32	May 31	Sept. 12	104	151	63
64	Kanaskis	4130	- 50	83	27	4	72	44	25, 09	102, 0	2.28	3.15	4.36	2.57	11	June 27	Aug. 24	58	82	64
65	Keg River	1402	- 67	99	6	-16	74	47	15, 44	50, 9	.73	1.59	2.01	2.46	15	June 20	Aug. 16	57	79	65
66	Kinuso	1938	- 55	93	10	- 7	73	52	18, 92	55, 8	1.11	1.70	2.97	3.09	17	May 10	Sept. 3	85	115	66
67	Lac La Biche	1835	- 55	93	10	- 7	73	52	17, 83	58, 2	1.02	1.36	2.64	2.83	7	May 26	Sept. 9	106	125	67
68	Lacombe	2783	- 56	101	19	- 5	76	49	18, 35	48, 2	1.32	2.02	3.48	2.85	43	June 9	Aug. 26	78	138	68
69	Lake Louise	5032	- 63	94	19	- 7	71	38	30, 37	193, 3	2.08	1.93	2.46	1.96	34	July 10	July 21	111	58	69
70	Lethbridge Airport	3018	- 45	104	27	- 7	80	52	17, 23	65, 7	1.36	2.09	3.20	1.69	26	May 25	Sept. 13	111	147	70
71	Lloydminster	2120	- 58	100	-	-	76	52	-	-	.84	1.23	2.51	2.46	38	June 3	Aug. 31	89	138	71
72	Lundbreck (Playle Cr.)	3918	- 52	108	29	3	78	41	19, 28	82, 9	1.46	2.12	3.58	1.90	36	July 2	Aug. 1	30	86	72
73	Lyndon	4100	-	-	-	-	-	-	20, 11	78, 1	1.76	2.47	3.90	1.94	2	-	-	70	107	73
74	McMurray Airport	1216	- 59	96	4	-16	76	48	16, 85	50, 0	.75	1.31	2.36	2.93	27	June 16	Aug. 22	67	101	74
75	Magrath	-	-	99	-	-	79	52	-	-	1.92	3.01	2.22	52	-	-	-	-	-	75
76	Manyberries	3000	- 45	105	21	1	83	53	11, 92	38, 7	.97	1.34	2.47	1.32	23	May 21	Sept. 15	117	159	76
77	Mayberne Forestry	3400	-	-	-	-	-	-	-	-	2.36	4.33	4.43	12	June 5	Aug. 26	82	126	77	
78	Meenook	2265	-	-	-	-	-	-	18, 73	52, 9	.90	2.06	3.01	3.03	19	May 22	Sept. 9	110	139	78
79	Medicine Hat Airport	2365	- 51	108	22	2	83	55	14, 29	48, 7	.98	1.64	2.32	1.36	55	May 15	Sept. 18	126	152	79
80	Mountain View	4325	-	-	-	-	-	-	22, 56	107, 6	2.29	2.83	3.71	1.43	-	-	-	-	-	80
81	Naco	2400	- 58	105	14	- 7	79	49	13, 24	41, 6	.93	1.09	2.36	1.95	18	June 2	Sept. 4	94	130	81
82	Nordegg	4300	- 53	91	20	1	69	41	21, 73	84, 5	1.34	2.42	4.18	3.17	29	June 30	Aug. 2	33	98	82
83	North Cooking Lake	2430	-	-	-	-	-	-	-	-	-	-	-	-	8	May 31	Sept. 17	109	130	83
84	Okotoks	3448	-	-	-	-	-	-	-	-	-	-	-	-	18	June 8	Sept. 1	85	129	84
85	Olds	3413	- 47	99	22	1	74	48	18, 21	49, 0	1.17	2.07	3.56	2.74	35	June 3	Sept. 8	97	161	85
86	Patricia	2403	-	-	-	-	-	-	-	-	-	-	-	-	15	May 22	Sept. 11	112	129	86
87	Peace River	1820	- 57	98	1	-17	74	47	12, 26	30, 5	.60	1.15	1.98	2.19	26	June 2	Sept. 1	91	164	87
88	Peavine	2279	- 53	93	15	- 1	75	48	19, 23	50, 1	.83	1.82	3.24	3.72	-	-	-	-	-	88
89	Pekisko	4721	- 52	97	27	4	72	41	25, 16	107, 1	2.33	2.97	4.53	2.09	40	June 29	Aug. 4	36	100	89
90	Penhold	97	- 50	97	16	- 3	74	50	17, 30	47, 4	1.10	1.85	3.28	2.81	48	June 1	Sept. 7	98	141	90
91	Pincher Creek	3753	- 48	97	27	9	77	47	20, 62	84, 6	1.75	2.55	3.77	1.50	15	May 30	Sept. 8	101	134	91
92	Pokapine	2440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	92
93	Ponoka	2810	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	93
94	Ranfurly	2250	- 60	105	13	- 7	76	50	17, 33	50, 7	.97	1.51	2.63	2.84	45	June 1	Aug. 31	91	144	94
95	Raymond	3123	- 45	100	28	-	82	51	15, 98	62, 4	1.68	1.66	2.45	1.21	15	May 19	Sept. 15	119	144	95
96	Red Deer (Penhold) (A)	2965	- 59	99	18	- 2	74	50	21, 44	49, 2	1.29	2.82	3.72	3.26	28	June 9	Aug. 27	79	113	96
97	Rocky Mountain House	3330	- 44	91	20	1	72	48	21, 20	66, 9	1.48	2.23	3.69	3.32	6	June 4	Sept. 2	90	108	97
98	Sedgewick	2194	- 55	103	18	- 2	78	50	15, 65	35, 1	1.02	1.52	3.04	2.73	22	May 31	Sept. 8	100	144	98
99	Seven Persons	2480	-	-	-	-	-	-	13, 79	47, 6	.96	1.51	2.42	1.38	1	May 30	Sept. 24	117	-	99
100	Ston	2315	- 63	102	16	- 6	76	48	17, 92	57, 2	.92	1.63	2.95	3.38	36	June 15	Aug. 24	70	133	100
101	Slave Lake	1905	- 55	100	11	- 8	73	48	18, 32	56, 0	.85	1.71	2.60	3.02	26	June 9	Aug. 26	78	124	101
102	Springdale	3000	- 66	95	19	- 7	73	44	20, 03	57, 4	1.48	2.15	3.52	3.28	37	June 23	Aug. 10	48	93	102
103	Stettler	2700	- 52	100	17	- 1	77	50	16, 06	42, 7	.81	1.53	3.08	2.63	32	May 26	Sept. 3	100	155	103
104	Strathmore	3160	-	-	-	-	-	-	-	-	1.68	3.14	2.17	35	May 28	Sept. 9	104	149	104	
105	Suffield	2543	- 53	105	19	0	82	54	12, 62	36, 0	.74	1.53	2.29	1.32	10	May 30	Sept. 9	102	126	105
106	Taber	2650	- 44	105	26	4	80	54	15, 09	49, 6	1.28	1.67	3.10	1.56	-	-	-	-	-	106
107	Telfordville	2250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	107
108	Thorhild (Radway)	2075	- 61	101	13	- 9	76	48	16, 27	44, 8	.89	1.62	2.70	2.80	26	June 12	Aug. 21	70	115	108
109	Thorsby	2450	- 55	98	17	- 3	74	49	17, 83	42, 6	1.21	1.81	3.32	3.41	18	June 2	Sept. 9	99	140	109
110	Three Hills	2936	- 55	104	18	- 6	79	46	15, 32	35, 3	1.03	1.73	3.04	2.17	39	June 13	Aug. 21	69	112	110
111	Trochu	-	-	-	-	-	-	-	16, 25	51, 1	1.34	1.54	2.48	2.12	-	-	-	-	-	111
112	Turner Valley	-	- 45	90	28	0	71	46	22, 73	87, 7	2.59	2.42	4.22	2.90	-	-	-	-	-	112
113	Vauxhall	2555	- 56	105	24	2	81	51	13, 03	38, 4	.74	1.56	2.20	1.56	32	May 27	Sept. 13	109	144	113
114	Vegreville	2082	- 102	-	-	-	77	50	-	-	.68	1.49	2.57	2.88	8	June 8	Aug. 28	81	104	114
115	Vermilion Airport	2037	- 55	99	10	- 7	75	49	15, 76	42, 3	.86	1.17	2.50	2.58	24	June 8	Aug. 23	75	112	115
116	Viking	2230	- 69	103	12	- 6	76	49	15, 86	40, 8	.86	1.34	2.72	2.75	26	June 3	Sept. 1	90	144	116
117	Vulcan	3442	-	-	-	-	-	-	16, 10	49, 9	1.22	2.09	2.98	1.85	6	May 20	Sept. 11	114	132	117
118	Wabamun	2386	-	-	-	-	-	-	-	-	.35	1.07	2.71	2.01	22	May 29	Sept. 11	105	140	118
119	Wabasca	1720	- 61	102	10	- 9	74	53	13, 22	32, 6	.85	1.54	2.21	2.53	8	June 2	Aug. 30	89	116	119
120	Wagner	1915	- 51	92	12	- 6	71	50	16, 57	54, 4	1.03	1.73	3.04	2.17	39	June 13	Aug. 21	69	112	120
121	Wastina (Hemauke)	2430	- 54	104	13	- 8	80	48	12, 72	32, 1	.66	1.11	2.45	2.02	33	June 7	Aug. 28	82	124	121
122	Waterton Lakes (Belly R.)	4500	-	-	-	-	-	-	39, 06	212, 3	4.15	3.98	5.52	2.03	-	-	-	-	-	122
123	Waterton Park (H. Q.)	4200	-	-	27	10	75	51	42, 31	228, 5	4.43	3.54	5.17	1.88	3	June 3	Sept. 10	99	-	123
124	Wetaskiwin	2480	- 58	99	17	- 3	75	50	18, 27	53, 5	1.32	1.74	3.06	3.14	43	May 31	Sept. 3	95	137	124
125	Whitecourt	2430	- 58	93	15	- 5	73	47	20, 31	60, 3	1.20	1.85	2.88	3.86	6	June 22	Aug. 15	54	79	125
126	Winnifred	2725	-	-	-	-	-	-	13, 66	49, 4	1.12	1.76	2.38	1.21	-	-	-	-	-	126

(e) Indicates less than 31 days. July 15th is arbitrarily taken as the critical date between spring and fall frosts.

GEOLOGY

The Precambrian or Canadian Shield in Alberta is overlain by deposits from the Palaeozoic, Mesozoic and Cenozoic eras. The Canadian Shield consists of a series of igneous intrusions of great variety, and altered or metamorphosed sedimentary and volcanic formations. The Palaeozoic rocks consist mainly of limestone, dolomite and shale. During the Cretaceous period of the Mesozoic era sandstones of continental origin and shales of marine origin covered the Palaeozoic rocks. Sediments of the Tertiary period of the Cenozoic era overlie these sandstone and shale layers of the Mesozoic era. These Tertiary formations lie in a broad belt running northwest-southeast through western Alberta.

The Rocky Mountains were formed over 50 million years ago by pressure exerted from the west which folded and pushed sedimentary strata eastward over other rock formations. The harder, more resistant Palaeozoic rocks now stand up as the Rocky Mountains, and east of them the foothills are formed by the softer Mesozoic sandstones and shales.

Oil and gas reservoirs are found mainly in Cretaceous, Mississippian and Devonian formations. The major oil fields in Alberta are east of the front ranges of the mountains. Gas fields are widely distributed throughout the province.

The Athabasca Oil Sands cover some 20,000 square miles in northern Alberta. The exposed portion of the oil sands make up a small percentage of the over-all area and can be found along the Athabasca River at Fort McMurray. These sands are made up of loose sand, silt and clay impregnated with a very viscous asphaltic oil.

There are three major zones of coal formation in Alberta. The Blairmore-Kootenay horizon is the oldest, and is of Early Cretaceous age. The two younger horizons, the Belly River and Edmonton formations, are of Late Cretaceous age. Folding and faulting of strata have brought the older formations to the surface in the foothills region.

During the Middle Devonian period a sea that covered part of Alberta dried up leaving behind large deposits of salt. There are four salt beds in Alberta, the most extensive of which covers a band 100 miles wide from Fort Vermilion in the north to Princess in the south.

Limestone and dolomite deposits, occurring mainly in Cambrian and Devonian Carboniferous rocks are exposed in the Rocky Mountains in the southwest of the province; the Devonian rocks also outcrop in northeastern Alberta.

Sand and gravel deposits of two ages are widely distributed throughout Alberta. Quartzite gravels and sands of Tertiary age are found capping many of the hill areas in the province, such as the Cypress, Hand, Swan and Clear Hills. These sands and gravels also are widely distributed in western Alberta, and on the floors of pre-glacial stream channels throughout the province. Gravels and sands of the glacial period, containing much Precambrian rock material, are found on the floors of present-day rivers and also

scattered among the glacial deposits across Alberta.

Clays are found principally in glacial and post-glacial deposits. These clays are not suitable for fine china but are used in the manufacture of cement, brick, tile and other ceramic products. Shales in Alberta are found in Cretaceous and older strata. Shales of Cretaceous and of Tertiary age are suitable for brick, tile and the manufacture of lightweight aggregate. The potential of many older shales is as yet unknown.

Gypsum deposits of Middle Devonian age occur at Peace Point and along the Salt, Slave and Little Buffalo Rivers in the extreme northeastern part of the province, and in the subsurface at Fort McMurray. Deposits of Triassic gypsum are exposed north of Jasper at Mowitch Creek and Fetherstonhaugh Creek. In southern Alberta, gypsum deposits of Late Devonian age can be found at Head Creek in the Highwood Range.

Iron-rich deposits of Late Cretaceous age have been found in the Crowsnest Pass. The iron is contained in black magnetic sands interbedded with coarse sandstones. Other extensive deposits have been found while drilling for oil in the Peace River country. This ore is of low grade and consists mainly of oolitic hydrous iron oxide.

Other industrial or economic minerals found in Alberta include phosphate, quartz-rich sand, sodium sulphate, marl, pumicite, talc, and bentonite. The economic significance and a fuller explanation of these and other minerals will be found in the Industrial Minerals section.



Sugar beet production is an important part of Alberta's agricultural industry, supporting this sugar refinery at Taber.

NET VALUE OF PRODUCTION

The primary industries: agriculture, mining, trapping, forestry, fishing and the generation of electricity; and the secondary industries: manufacturing and construction, together form the framework of the economy. During the past 20 years, marked shifts have occurred in their rankings as to economic importance. Prior to 1945, agriculture provided the main contribution to total value of production, and the economy was highly vulnerable to yearly fluctuations resulting from price and climatic variations. The province has since developed a more diversified, and hence more stable, economic base. According to 1969 preliminary estimates, mining production will account for approximately one-third of the total net value of production while the agriculture, construction and manufacturing industries will each account for approximately one-fifth.

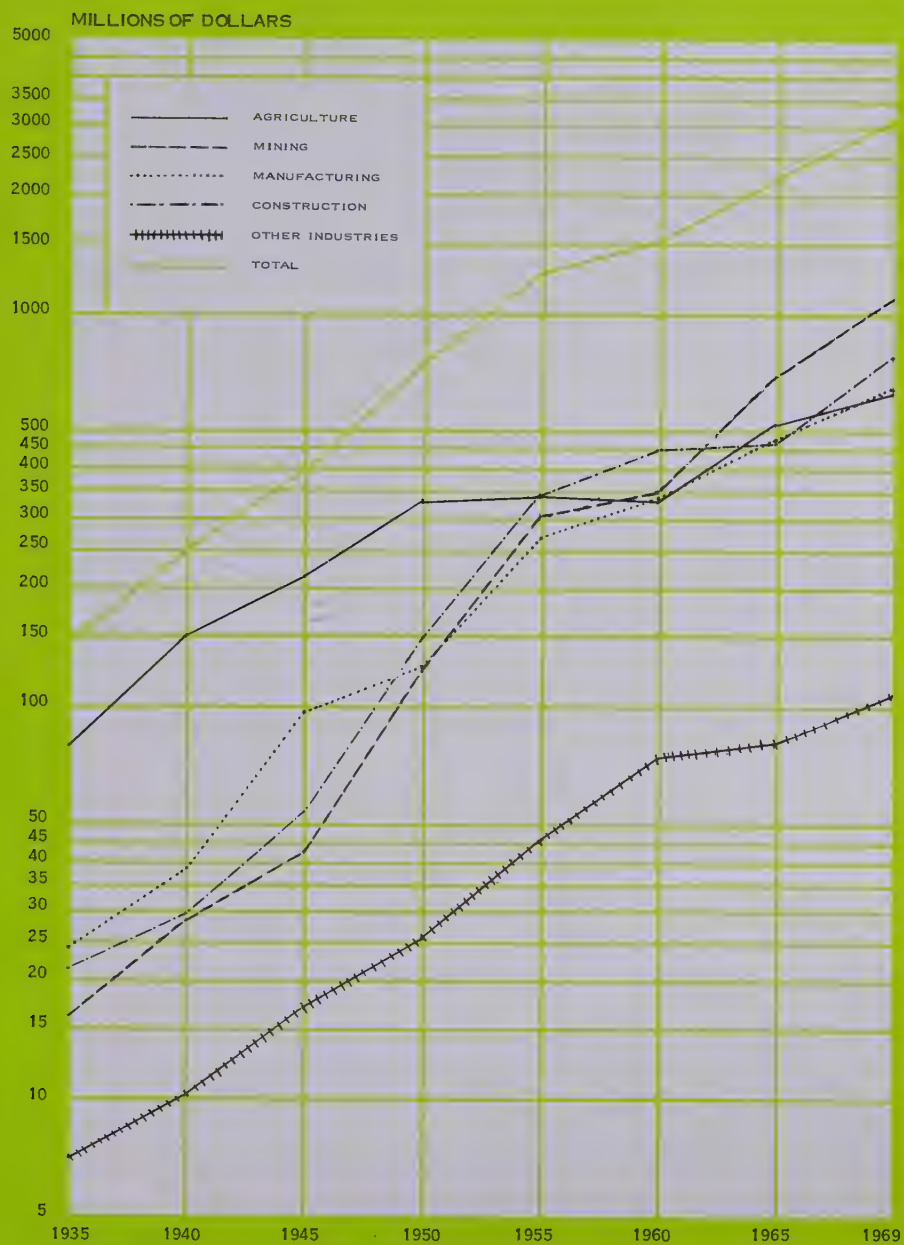
The net value of production is a measure of "value added" by each industry. The measure is determined by deducting from the total value of output, the costs of all materials, supplies, fuel, and electricity consumed in the production process.

Table 2
NET VALUE OF PRODUCTION AND PER CAPITA NET VALUE OF PRODUCTION
CANADA, WESTERN CANADA AND ALBERTA,
1935 - 1969

	Net Value of Production			Per Capita Net Value of Production		
	Canada \$	Western Canada \$	Alberta \$	Canada \$	Western Canada \$	Alberta \$
1935	2,352,293,000	567,781,000	147,345,000	217	180	193
1940	3,725,920,000	964,742,000	252,713,000	327	298	320
1945	6,297,784,000	1,685,212,000	403,303,000	522	505	499
1950	10,943,835,000	2,957,886,000	750,345,000	798	805	822
1955	15,718,846,000	4,358,570,000	1,282,951,000	1,001	1,043	1,176
1960	18,981,824,000	5,202,115,000	1,535,915,000	1,062	1,095	1,190
1965	25,815,636,000	7,206,047,000	2,224,880,000	1,314	1,385	1,534
1966	29,071,776,000	8,323,096,000	2,596,689,000	1,452	1,571	1,775
1967	29,887,554,000	8,394,343,000	2,727,341,000	1,465	1,554	1,830

"Net value" is more useful than "gross value" for comparing major industries because it rules out duplication within or between industries. For example, rough lumber produced by a sawmill becomes the raw material for a planing mill. The planing mill in turn processes the lumber. Planed lumber is shipped to a sash and door factory where the dressed lumber is converted into windows and doors. A total of gross production figures for the three industries specified in the example would include the value of the basic rough lumber more than once, resulting in a cumulatively exaggerated figure. Net value of production, measuring only the value added by each industry, is a more realistic figure to use for showing actual contributions to the total economy.

Total net value of production for all industries increased eight times in the 1945-69 period, from \$403 million to over \$3,200 million. Although in dollar terms the net value of agricultural production has increased since 1945, its proportion of total net production in Alberta has decreased from 53 per cent to 19 per cent. The most



NET VALUE OF PRODUCTION BY INDUSTRIES, ALBERTA, 1935-1969

Table 3

NET VALUE OF PRODUCTION BY INDUSTRIES, ALBERTA
1935 - 1969

	1935		1940		1945		1950		1955	
	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%
Agriculture	79,394	53.9	147,781	58.5	212,707	52.8	331,066	44.1	332,403	25.9
Forestry	1,310	0.9	2,409	1.0	6,299	1.6	8,954	1.2	13,163	1.0
Fisheries	139	0.1	222	0.1	742	0.2	437	0.1	688	0.1
Trapping	1,065	0.7	1,893	0.7	2,067	0.5	1,889	0.3	2,078	0.2
Mining	16,096	10.9	27,851	11.0	41,713	10.3	122,543	16.3	303,752	23.7
Electric Power	4,572	3.1	5,810	2.3	8,227	2.0	13,863	1.8	28,858	2.2
Manufacturing	23,769	16.1	37,747	14.9	78,548	19.5	123,893	16.5	263,309	20.5
Construction	21,000	14.3	29,000	11.5	53,000	13.1	147,700	19.7	338,700	26.4
TOTAL	147,345	100.0	252,713	100.0	403,303	100.0	750,345	100.0	1,282,951	100.0
	1960		1965		1966		1967		1969*	
	\$'000	%	\$'000	%	\$'000	%	\$'000	%	\$'000	%
Agriculture	329,278	21.4	509,563	22.9	655,178	25.2	523,031	19.2	620,000	19.2
Forestry	20,780	1.4	6,782	0.3	7,211	0.3	7,591	0.3	8,000	0.2
Fisheries	1,158	0.1	677	-	844	-	758	-	800	-
Trapping	2,070	0.1	1,887	0.1	1,776	0.1	1,549	0.1	2,000	0.1
Mining	349,115	22.7	690,524	31.1	772,079	29.7	895,205	32.8	1,093,000	33.9
Electric Power	48,587	3.2	69,389	3.1	74,231	2.9	77,763	2.8	100,000	3.1
Manufacturing	339,377	22.1	475,343	21.4	527,197	20.3	574,215	21.1	640,000	19.9
Construction	445,551	29.0	470,816	21.1	558,172	21.5	647,229	23.7	760,000	23.6
TOTAL	1,535,915	100.0	2,224,980	100.0	2,596,689	100.0	2,727,341	100.0	3,223,800	100.0

* Estimates

marked increase has occurred in mining, reflecting the growth of the oil industry. Increasing from \$42 million in 1945 to an estimated \$1.1 billion in 1969, the percentage contribution to the total net value rose from 10 per cent to 34 per cent. Similarly, the manufacturing and construction industries have experienced steady growth from a combined total net value of production of \$132 million in 1945 to an estimated \$1.4 billion in 1969.

Per capita net value of production in Alberta increased from \$499 per capita in 1945 to \$2,065 per capita in 1969.

The reader is cautioned that the historical net value production statistics shown in the accompanying table are in some instances not strictly comparable on a yearly basis. Due to conceptual changes in valuation methods, breaks occur in mining and manufacturing in 1959, in construction and agriculture in 1961, in forestry in 1963, and again in agriculture in 1967.



Recent construction in downtown Calgary is rapidly changing the face of the foothills city.

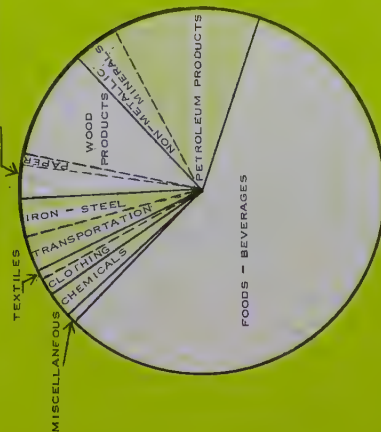
GROSS VALUE OF PRODUCTION
MANUFACTURING INDUSTRIES - ALBERTA

1949 - \$ 371,995,120

1959 - \$ 850,331,000

1969 - \$ 1,757,000,000

1949

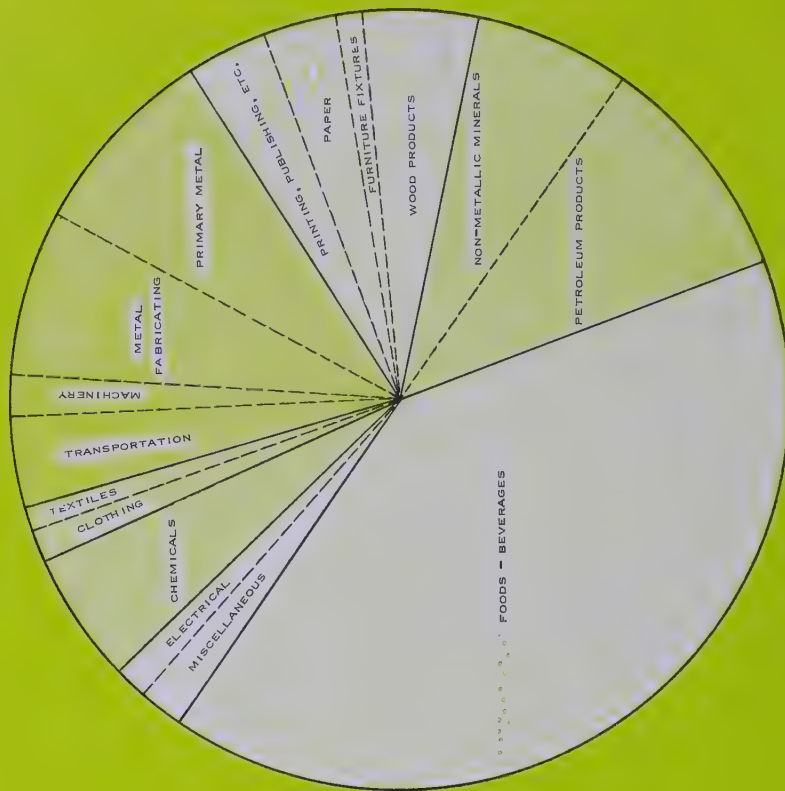


1949

1959



1969



MANUFACTURING

Alberta's central location provides manufacturers with a major advantage in serving western Canada. This region stretches from the Lakehead on the east to the Pacific Ocean on the west; and, in view of the increasing development of the Canadian northland, to the McKenzie Valley and the Arctic reaches. There can be no doubt that by establishing a manufacturing plant in the heart of this vast area, manufacturers have a distinct transportation advantage over plants placed anywhere on the periphery.

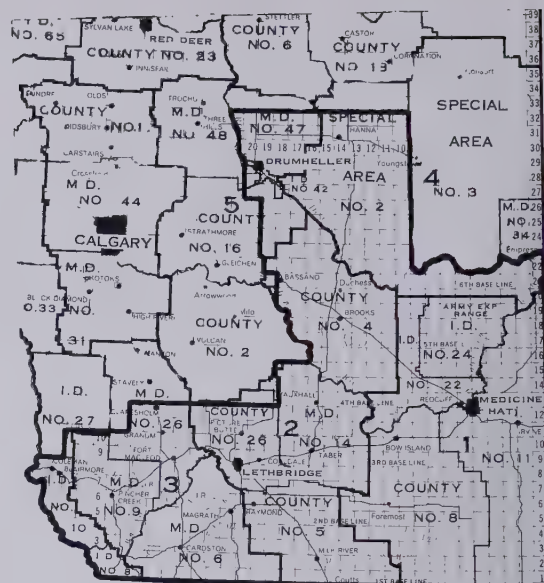
The distance of the province from, and consequent cost of shipping to tidewater presents a problem to firms hoping to serve world markets. Calgary and Edmonton, the major industrial centres, are some 800 miles from the ports of Vancouver and Prince Rupert. Manufacturers producing for local western markets are protected by the Canadian freight rate structure, but the freight tariffs are of little help in encouraging manufacturing for export.

Proximity to the mineral-rich Canadian Shield ensures ready access to many types of metallic minerals. Liquid hydrocarbons, coal and sulphur, basic materials for chemical industries, are found in Alberta in practically unlimited amounts.

Alberta is fortunate in having been endowed with one of the world's greatest concentration of the fossil fuels — petroleum, natural gases, and coal. Production from oil-bearing sands has begun at Fort McMurray, and the provincial government has given approval for the construction of a second extraction plant. The abundance of natural gas and the generation of electricity from strip-mined coal fields and hydro-electric stations make Alberta's energy costs one of the lowest in Canada.

The economic climate of the province has been stimulating and expansive for the past two decades, due mainly to the impetus received from the petroleum industry. Other areas attempting to change from an agriculturally based economy had to depend on a major primary manufacturing industry, coupled with low labour costs, to sustain growth during the take-off period. This transitional role is played by the petroleum industry in Alberta; and consequently, because of the high value of labour in the industry and because of its ancillary industrial and manpower requirements, the province has been freed from many of the social problems and hardships associated with massive industrialization. No single manufacturing industry has yet reached such size that a labour dispute has had a significant effect on the economy of a community, or the province. As a result of the excellent state of provincial government finances, taxation policies and practices are reasonable and rates are likely to remain fairly stable.

The southern portion of Alberta has been established as a designated region under the federal government Regional Development Incentives Act. This Act provides for generous capital incentives to industries establishing, expanding or modernizing plants in designated regions. Up to \$12 million in cash grants may be made available for a new plant, or for expansion of an existing plant for the manufacture of additional lines of products; and \$6 million may be made available for modernization or ordinary expansion. Most manufacturing and most kinds of processing industries are eligible for grants: excluded is initial processing in a resource-based industry, such as oil refining, pulp or newsprint processing. It is expected that similar incentive programs for some northern regions of Alberta may be announced later. In such "special areas", industries may be eligible for federal industrial development grants.



R.D.I.A. AREA

Distance makes mass markets, such as the St. Lawrence Valley and the north-eastern United States, difficult to reach with consumer goods. A new mass market is developing along the western seaboard of the U.S.A. Alberta, as a ready source of raw materials and as an area in which to manufacture to serve this market, should be considered by firms mindful of long-term prospects.

The population of western Canada reached 5.6 million in 1969. This market can be broken down into three regions each comprising about a third of the total population: Manitoba-Saskatchewan with 1.9 million people; Alberta with 1.6 million and British Columbia with 2.1 million. Alberta is ideally situated to serve all three areas.

The high level of personal income ensures a relatively affluent local market. Using per capita disposable income as the criterion, the purchasing power of 21 million Canadians represents a market of 40 million persons by European standards; or a market of over 60 million by Latin American, Asian or African standards. By the same criterion, western Canada represents a market of the equivalent of from 10 million Europeans to 15 million persons in other parts of the world.

Canadian manufacturing was first established on a major scale in the St. Lawrence Valley. Consumer-oriented industry naturally gravitates to this area, because of external economies that accompany established industrial complexes and large local markets. The broad manufacturing base which has developed in the St. Lawrence Valley has also enabled other more complex industries to start and to produce a greater range of consumer goods.

Table 4

PRELIMINARY PRINCIPAL STATISTICS OF THE MANUFACTURING INDUSTRIES
BY CENSUS DIVISIONS, ALBERTA - 1968

	Estab- lishments No.	Employees			Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials and Supplies Used \$	Value Added* \$	Value of Shipments of Goods of Own Manufacture \$
		Male No.	Female No.	Total No.					
DIVISION NO. 1									
Medicine Hat - Redcliff	49	1,757	437	2,194	11,766,498	1,208,412	40,427,392	21,037,539	62,673,343
Other	3	3	2	5	11,765	1,648	21,375	22,529	45,552
GRAND TOTAL	52	1,760	439	2,199	11,778,263	1,210,060	40,448,767	21,060,068	62,718,895
DIVISION NO. 2									
Lethbridge	82	2,004	384	2,388	12,146,508	891,955	94,724,693	34,103,644	129,720,292
Brooks	9	33	21	54	201,141	1,165,066	1,165,066	356,225	1,541,500
Taber	9	309	81	390	1,528,061	292,237	8,596,103	3,826,515	12,714,855
Other	19	268	25	293	1,406,023	236,356	6,137,568	2,486,623	8,860,547
GRAND TOTAL	119	2,614	511	3,125	15,281,733	1,440,757	110,623,430	40,773,007	152,837,194
DIVISION NO. 3									
Claresholm	9	263	23	286	1,174,039	54,784	5,431,760	2,089,572	7,576,116
Pincher Creek	4	10	9	19	71,252	4,979	184,500	118,695	308,174
Other	19	208	87	295	1,364,433	153,610	4,170,666	2,937,796	7,262,072
GRAND TOTAL	32	481	119	600	2,609,724	213,373	9,786,926	5,146,063	15,146,362
DIVISION NO. 4									
Hanna	3	13	1	14	69,027	1,970	48,616	107,577	158,163
Other	3	5	4	9	24,565	841	20,056	35,860	56,757
GRAND TOTAL	6	18	5	23	93,592	2,811	68,672	143,437	214,920
DIVISION NO. 5									
Drumheller	5	25	9	34	133,204	9,491	182,742	188,140	380,373
Linden	4	32	2	34	174,503	11,147	376,672	348,497	736,316
Three Hills	3	7	3	10	32,673	1,392	38,268	55,126	94,786
Other	10	36	9	45	187,504	19,623	1,216,427	323,840	1,559,890
GRAND TOTAL	22	100	23	123	537,884	41,653	1,814,109	915,603	2,771,365
DIVISION NO. 6									
Calgary	481	12,513	2,398	14,911	87,566,393	6,247,413	303,132,912	180,190,761	499,571,086
Didsbury	5	7	7	14	56,293	6,697	146,988	79,455	233,140
High River	7	40	9	49	142,494	7,908	215,780	404,065	627,753
Oktoks	4	13	7	20	61,488	12,670	396,588	148,159	557,417
Olds	6	26	5	31	127,710	22,284	517,833	158,672	698,799
Other	20	117	7	124	676,454	54,804	1,765,651	1,599,430	3,419,885
GRAND TOTAL	523	12,716	2,433	15,149	88,630,832	6,351,786	306,175,752	192,580,542	505,108,080
DIVISION NO. 7									
Provost	3	9	3	12	58,319	3,984	129,526	111,915	245,425
Stettler	8	41	19	60	267,681	15,245	1,035,465	449,296	1,500,006
Wainwright	5	23	6	29	117,854	4,553	244,104	170,009	418,666
Other	14	51	10	61	263,544	28,992	1,530,034	513,995	2,073,021
GRAND TOTAL	30	124	38	162	707,398	52,774	2,939,129	1,245,215	4,237,118
DIVISION NO. 8									
Red Deer	40	561	91	652	3,328,908	304,349	31,717,518	8,109,790	40,131,657
Lacombe	9	63	27	90	338,749	24,032	794,162	544,552	1,362,746
Ponoka	11	39	16	55	227,153	19,227	689,960	358,205	1,067,392
Rimbe	5	20	6	26	105,264	9,014	294,317	133,254	436,585
Rocky Mountain House	4	20	7	27	106,085	11,099	386,194	180,266	577,559
Sylvan Lake	3	4	4	8	20,510	1,365	37,052	34,300	72,717
Other	23	140	17	157	793,364	146,588	8,708,180	1,990,235	10,845,003
GRAND TOTAL	95	847	168	1,015	4,920,033	515,674	42,627,383	11,350,602	54,493,659
DIVISION NO. 9									
GRAND TOTAL	49	658	66	724	3,626,312	1,310,563	6,767,508	9,308,589	17,386,660
DIVISION NO. 10									
Lloydminster	14	390	27	417	2,736,679	388,731	10,466,439	4,140,072	14,995,242
Vermilion	4	24	10	34	164,227	13,562	393,376	264,486	671,424
Other	49	600	87	687	3,896,177	798,384	30,730,459	11,969,521	43,498,364
GRAND TOTAL	67	1,014	124	1,138	6,797,083	1,200,677	41,590,274	16,374,079	59,165,030
DIVISION NO. 11									
Edmonton	564	15,556	4,441	19,997	115,728,593	9,175,254	375,940,506	253,860,461	638,976,221
Drayton Valley	3	10	7	17	56,219	5,604	120,880	105,743	232,227
Leduc	3	19	6	25	103,241	9,568	430,808	249,635	690,011
Stony Plain	4	11	4	15	51,565	6,381	302,623	157,402	466,406
Wetaskiwin	12	209	19	228	974,286	68,627	6,221,259	2,058,051	8,347,937
Other	22	1,288	84	1,372	9,725,790	2,535,311	41,960,780	21,911,674	66,407,765
GRAND TOTAL	608	17,093	4,561	21,654	126,639,694	11,800,745	424,976,856	278,342,966	715,120,567
DIVISION NO. 12									
St. Paul	7	41	11	52	191,328	11,349	515,844	351,397	878,590
Grande Centre	3	11	7	18	79,238	7,266	188,560	105,782	301,608
Other	23	125	16	141	523,770	68,578	1,362,086	912,329	2,342,993
GRAND TOTAL	33	177	34	211	794,336	87,193	2,066,490	1,369,508	3,523,191
DIVISION NO. 13									
Athabasca	6	19	11	30	73,562	7,741	481,759	185,702	675,202
Barrhead	6	38	8	46	224,451	46,338	1,384,305	345,858	1,776,501
Westlock	7	25	8	33	132,840	8,955	1,003,745	341,265	1,353,965
Other	15	87	7	94	375,986	50,371	1,249,535	887,451	2,187,357
GRAND TOTAL	34	169	34	203	806,849	113,405	4,119,344	1,760,276	5,993,025
DIVISION NO. 14									
GRAND TOTAL	28	607	45	652	4,289,783	1,327,070	14,275,138	11,259,516	26,861,724
DIVISION NO. 15									
Grande Prairie	17	413	114	527	2,561,453	150,788	4,567,494	5,248,577	9,966,859
Fairview	4	8	4	12	46,083	2,132	64,634	71,005	137,771
Grimshaw	4	15	1	16	64,549	7,405	135,084	76,457	218,946
Peace River	6	39	15	54	241,641	12,873	618,483	404,211	1,035,567
Other	122	947	23	970	3,821,726	486,498	5,439,490	6,298,906	12,224,894
GRAND TOTAL	153	1,422	157	1,579	6,735,452	659,696	10,825,185	12,099,156	23,584,037

* "Value Added" does not include change of inventory of "Goods in Process" and "Finished Goods"

Despite the historic head-start of the central Canadian provinces, Alberta and other western provinces have broadened and diversified their manufacturing bases. In 1946, the main industries — producing and processing foods and beverages in the inland provinces, and timber products in British Columbia — provided 55 per cent of total manufacturing shipments of the four western provinces. By 1965 this proportion had dropped to 39 per cent, or by an average of almost one per cent per year. This change indicates the upsurge of other diverse manufacturing industries. The upsurge is a measure of the inherent advantages and of easily accessible natural resources.

The growth of Alberta's manufacturing industry has been aided by the benefits that accrue to an area which has had a late start in industrialization. There are no interests vested in old methods, old machinery and rooted labour pools — interests which have often retarded modernization and efficiency in the older industrial areas. The equipment and techniques being used are the most modern, and Alberta firms can successfully compete with other producers, both national and foreign.

Because the net income from agriculture in the western inland provinces exceeded net income from all other sources for the two decades after World War I, the area was quite properly regarded as being primarily agricultural. Most processed and manufactured products reaching eastern Canadian and world markets were based on agriculture. What little other manufacturing existed was limited to the immediate needs of the relatively small urban communities: small oil refineries, newspapers, cement, a small amount of clothing manufacture, bakeries, tinsmiths. Manufactured goods from eastern North America, Europe and Japan were imported in exchange for farm products. While this exchange was perfectly normal and natural from a historic perspective, it induced feelings of hostility and frustration since the great fluctuations in prices and volumes of western Canada output were not paralleled in the volume and prices of imported manufactured goods.

Since World War II, there has been a radical and dramatic change in the situation. Although the volume of agricultural production remains somewhat subject to the vagaries of the weather, prices have been more stable. The development of North American and world markets for paper and wood, nickel and nickel alloys, fabricated materials, chemicals and vegetable oils, textiles and clothing has resulted in an increasing volume of semi-manufactured or semi-processed materials being exported from the western provinces. Final consumer products, which were formerly imported, such as iron and steel materials and machinery, furniture, and various chemicals, are now being manufactured locally.

In the case of all goods produced locally for local markets, the distance from the major industrial centres of North America is an advantage to western fabricators because of high transportation costs. As more semi-processed materials become available, the industrial base in western Canada is broadening rapidly. Because of its solid resource and energy base, western Canada exceeds most areas in current rate of development and in favourable prospects for future development.

These general remarks although referring to western Canada, apply specifically

to Alberta in even greater degree. Alberta's manufacturing has been expanding rapidly during the post-war period. From 1940 to 1968 the net value of manufacturing production has increased fifteen fold to \$604 million; the gross value increased over fourteen fold to \$1,649 million. In 1946 processed food and beverages constituted 62 per cent of the value of all Alberta manufacturers' shipments; in 1968 this proportion had dropped to 41 per cent, although the value of production of foods and beverages has more than tripled.

Table 5
ANNUAL INVESTMENT IN MANUFACTURING, ALBERTA, 1950 - 1969
(millions of dollars)

	Food and Beverages	Iron and Steel Products	Wood	Transportation Equipment	Metal Fabricating	Non- Metallic Mineral Products	Petroleum Products	Other*	Total
1950	7.5	*	*	0.7	*	*	6.7	9.5	24.4
1951	8.4	*	*	0.7	*	*	14.4	21.6	45.1
1952	6.5	*	*	1.1	*	*	10.6	68.2	86.4
1953	9.1	3.0	*	1.4	*	4.7	6.0	79.9	104.1
1954	9.6	1.9	*	1.2	*	4.5	21.9	24.9	64.0
1955	8.0	3.3	*	0.9	*	12.9	24.4	28.5	78.0
1956	10.3	10.9	*	1.4	*	16.1	23.6	68.6	130.9
1957	8.5	6.8	*	1.6	*	5.3	19.9	40.6	82.7
1958	9.3	3.6	*	1.7	*	5.3	45.6	25.0	90.5
1959	10.6	8.9	*	1.1	*	11.6	35.8	32.1	100.1
1960	11.7	*	2.9	*	2.6	12.4	8.7	46.0	84.3
1961	12.2	*	2.5	*	1.7	7.2	3.9	29.4	56.9
1962	14.7	*	3.1	*	2.2	7.2	6.1	39.4	72.7
1963	13.5	*	3.9	*	1.9	9.7	4.4	31.4	64.8
1964	14.0	*	4.0	*	2.5	6.8	5.1	50.8	83.2
1965	15.0	*	4.3	*	3.1	10.2	3.8	69.2	105.6
1966	16.6	*	4.2	*	3.6	12.3	4.2	62.4	103.3
1967	21.2	*	7.3	*	3.4	13.1	-	68.4	113.4
1968	19.3	*	7.9	*	3.2	8.8	-	100.0	139.2
1969	22.2	*	6.8	*	4.4	14.1	-	87.6	135.1

* Figures included in other manufacturing.

Investment in Alberta manufacturing plants between 1948 and 1969 totalled over \$1.8 billion. From 1950 to 1954 the investment averaged \$65 million annually; this increased to \$96 million annually in the period 1955-1959. The average annual investment declined to \$72 million from 1960 to 1964; since 1964 to 1969 the average investment has reached to \$119 million annually.

The range of products produced in Alberta has become more diversified; new manufacturing plants have been established and existing plants expanded. Included in the list of new plants and major expansions are a pulp and newsprint mill, several meat processing plants, steel mills, several steel pipe mills, a range of oil industry equipment plants, several industrial and pleasure trailer and mobile home manufacturing plants, several food processing plants, plants producing construction materials, and an impressive range of chemical plants and oil refineries. At the present time growth is extremely rapid in the mobile home and trailer, the steel fabrication, the meat-packing and the plastics industries.

With the broadening of the industrial base, the fabrication and assembly of more component parts and semi-processed materials become possible. Industrial opportunities become increasingly abundant and more economically feasible. The current range of industrial products both attracts new industries and makes them possible. An indication of the size of local market for manufactured products presently brought into Alberta may be inferred from the accompanying table.

The two major cities, Calgary and Edmonton, account for over \$1.1 billion, over two-thirds, of the Alberta volume of manufacturing. Lethbridge accounts for over \$130 million, Medicine Hat for \$63 million, and Red Deer for about \$40 million. Other manufacturing centres account for \$313 million of volume — roughly 18 per cent of the total volume.

By western Canadian standards large plants have become more numerous. From 1952 to 1968, the number of Alberta plants, each with annual gross value of shipments of over \$10 million increased from eight to 29; the number with annual gross value of shipments of from \$1 million to \$10 million increased from 74 to 211. In 1952, one plant had over 1,000 employees; in 1968, there were two such plants. Firms employing between 200 and 1,000 persons have increased from 22 to 28. In the same period, total employment in manufacturing increased from 32,000 to 49,000 persons. In 1968 about 85 per cent of the total output was produced by 240 firms; about 45 per cent was produced by the 29 largest firms.

Table 6

SELECTED ITEMS OF IMPORTS, 1968 FROM FOREIGN COUNTRIES
WHICH COULD BE MANUFACTURED IN WESTERN CANADA

Product	ALBERTA Value \$	WESTERN CANADA Value \$
Particleboard, Reconstituted wood	187,302	1,090,736
Herbicides, n. e. s.	2,949,797	10,888,070
Acrylic Resins	1,031,378	1,473,546
Doors, Iron or Steel	236,702	759,203
Bolts and Headed or Threaded Rods, n. e. s.	172,667	931,521
Pipe Fittings, Iron, Steel, Finished, n. e. s.	1,223,083	3,068,547
Air and Gas Compressors	4,422,450	5,344,820
Pumps, Power, n. e. s.	2,020,274	4,323,523
Cranes and Derricks	1,296,609	3,332,019
Well Drilling Machinery, Apparatus and parts	15,368,933	17,086,067
Plows and Parts, n. e. s.	1,340,030	4,020,604
Disc Harrows and parts	1,599,289	5,844,583
Manure Spreaders and parts	350,206	1,131,025
Cultivators, Weeders and parts	736,818	3,172,207
Hay and Straw Balers and parts	1,312,041	3,758,756
Haying Machinery and parts, n. e. s.	1,186,418	2,300,681
Combine Reaper-Threshers	4,610,988	13,544,294
Farm Irrigation Systems and parts	956,404	1,891,865
Telephone Apparatus Equipment and parts	1,490,360	6,141,556
Furnaces, Warm Air, n. e. s.	604,483	687,295
Sweaters, Cardigans, Knit, Wool, Women's and Girl's	952,251	2,408,248



Agriculture remains one of Alberta's most important industries, production value closely following mining, construction and manufacturing.

Because manufacturing activity in western Canada is still in a comparatively early stage in relation to the industrial centres of North America, sources of industrial components and raw materials are not yet fixed. Broadening of the industrial base depends greatly on inter-firm communication.

Alberta manufacturers have begun to export manufactured products to other countries and other regions of Canada. Clothing, telephones and equipment, oil field production equipment, rubber tires, agricultural machinery, wood pulp, ceramic products and prefabricated buildings, mobile homes, trailers, chemicals and textiles, are typical of the diverse range of exports.

Local manufacturers are becoming ever more capable of supplying conveniently a substantial proportion of in-process parts and goods, which in the pre-1950 era had to be brought in from other parts of North America. Such local interchanges create additional manufacturing opportunities, and further economic development.

Interfirm communication has been promoted and advocated by governments and trade organizations. Active support is being given to programs designed to lessen dependence on imports, both interprovincial and foreign. These programs mainly take the form of acquainting local manufacturers with the materials needed by, and the products of, other local manufacturers. Attention is focussed on those items of foreign imports entering Canada in such volume that they offer prime opportunities to home industrialists. Assistance in translating the initial studies into industrial action is offered by the industrial development coordinators of municipal and provincial governments.

The sequence of developing and proving markets by large scale imports from other areas, then of assembling components as a stage of local manufacturing, and finally of completely fabricating locally, is well established in western Canada. An indication that the first stage of the sequence is well developed is the multibillion dollar volume of retail trade in the four western provinces.

Table 7
MANUFACTURING INDUSTRIES OF ALBERTA
1952, 1957, 1961 and 1968
(exclusive of sawmilling firms)

	1952	1957	1961	1968
	(number of firms)			
Number of Employees Per Firm				
0 - 5	686	586	579	678
6 - 15	236	305	371	468
16 - 25	81	105	98	166
26 - 50	89	114	113	137
51 - 100	63	75	71	111
101 - 200	33	39	42	62
201 - 500	17	25	21	34
501 - 1,000	5	10	7	4
1,001 - over	1	2	-	2
Salaries and Wages Paid by Firm				
\$				
0 - 7,500	531	375	296	257
7,501 - 30,000	340	402	471	534
30,001 - 50,000	90	115	147	200
50,001 - 75,000	58	90	83	145
75,001 - 100,000	39	40	61	106
100,001 - 150,000	49	69	72	99
150,001 - 200,000	29	30	36	56
200,001 - 500,000	46	87	86	153
500,001 - over	29	53	50	112
Net Value of Production Per Firm				
\$				
0 - 5,000	307	208	126	81
5,001 - 25,000	409	387	399	429
25,001 - 50,000	151	180	221	310
50,001 - 100,000	97	149	210	252
100,001 - 250,000	119	138	132	242
250,001 - 500,000	54	81	81	143
500,001 - 1,000,000	39	47	61	84
1,000,001 - over	35	71	72	121
Gross Value of Production Per Firm				
\$				
0 - 5,000	204	109	67	23
5,001 - 25,000	305	262	260	254
25,001 - 50,000	150	171	184	250
50,001 - 100,000	156	169	266	263
100,001 - 250,000	175	213	156	304
250,001 - 500,000	84	120	120	194
500,001 - 1,000,000	55	78	92	134
1,000,001 - 10,000,000	74	124	137	211
10,000,001 - over	8	15	20	29
Number of Firms	1,211	1,261	1,302	1,662

Table 8
PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES
ALBERTA - 1968

	Estab- lishments No.	Employees			Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials and Supplies Used \$	Value Added* \$	Value of Shipments of Goods of Own Manufacture \$
		Male No.	Female No.	Total No.					
✓ FOOD AND BEVERAGE INDUSTRIES:	468	11,040	2,908	13,948	75,615,069	5,656,029	511,789,690	164,895,030	682,440,749
1 Meat Products Industries:									
Slaughtering and Meat Packing Plants									
(Including: Animal Oils and Fats Plants,	41	4,130	799	4,929	31,362,382	1,267,335	317,500,973	61,852,609	380,620,917
Sausage and Sausage Casing Manufacturers)									
Poultry Processors	8	241	381	622	1,623,731	198,019	11,853,069	3,876,956	15,928,044
2 Dairy Products Industries:									
Butter and Cheese Plants)									
Pasteurizing Plants)									
Condenseries)	98	2,188	377	2,565	13,530,375	1,244,858	58,229,762	25,310,711	84,785,331
Ice Cream Manufacturers)									
Process Cheese Manufacturers)									
3 Grain Mills:									
Feed Manufacturers	85	666	58	724	4,120,412	526,979	37,397,210	8,627,112	46,551,301
Flour Mills	7	516	75	591	3,046,726	263,607	28,485,108	5,369,436	34,118,151
4 Bakery Products Industries:									
Bakeries	167	1,215	788	2,003	8,842,845	594,162	11,072,560	14,952,323	26,619,045
5 Beverage Manufacturers:									
Soft Drink Manufacturers	23	663	75	738	3,829,622	295,913	5,716,661	8,240,294	14,252,868
Breweries	6	466	42	508	3,670,672	275,613	6,294,771	17,915,320	24,485,704
6 Other Food Processors:									
Confectionery Manufacturers	5)								
Biscuit Manufacturers	2)								
Breakfast Cereal Manufacturers	2)								
Distilleries	1)								
Fruit and Vegetable Canners and Preservers	5)								
Macaroni Manufacturers	2)	955	313	1,268	5,588,304	989,543	35,239,576	18,850,269	55,079,388
Sugar Refineries	3)								
Vegetable Oil Mills	2)								
Wineries	2)								
Miscellaneous Food Manufacturers, n.e.s.	9)								
RUBBER INDUSTRIES: (1)									
LEATHER INDUSTRIES:	9	122	55	177	775,627	24,580	1,154,324	1,255,536	2,434,440
Leather Tanneries	3)								
Shoe Factories	1)								
Leather Glove Factories	1)	122	55	177	775,627	24,580	1,154,324	1,255,536	2,434,440
Miscellaneous Leather Products Manufacturers	4)								
TEXTILE INDUSTRIES:	21	299	284	583	3,348,687	177,146	6,554,130	5,697,365	12,428,641
Canvas Products	8	87	70	157	679,661	18,593	1,530,024	1,117,148	2,665,765
Embroidery, Pleating, Hemstitching Manufacturers	3)								
Fibre Preparing Mills	1)								
Synthetic Textile Mills	1)								
Cordage and Twine Industry	1)	212	214	426	2,669,026	158,553	5,024,106	4,580,217	9,762,876
Cotton and Jute Bag Industry	2)								
Automobile Fabric Accessories Manufacturers	1)								
Miscellaneous Textiles, n.e.s.	4)								
KNITTING MILLS: (2)									
CLOTHING INDUSTRIES:	21	384	1,650	2,034	8,022,727	86,443	10,385,123	13,266,215	23,737,781
Men's Clothing Factories	13)								
Women's Clothing Factories	5)								
Fur Goods Industry	2)	384	1,650	2,034	8,022,727	86,443	10,385,123	13,266,215	23,737,781
Hat and Cap Industry	1)								
WOOD INDUSTRIES:	280	4,064	388	4,452	21,344,882	1,399,982	38,408,984	35,560,885	75,369,851
Sawmills	185	1,470	30	1,500	5,888,000	752,560	8,096,000	9,551,440	18,400,000
Veneer and Plywood Mills	3	378	111	489	1,946,220	216,970	3,924,815	6,476,750	10,618,635
Sash and Door and Planing Mills	61	1,894	214	2,108	11,711,539	324,591	20,979,294	14,923,405	36,227,290
Wooden Box Factories	6	68	4	72	277,675	18,150	415,830	412,989	846,969
Coffin and Casket Industry	8	39	23	62	254,839	9,667	622,944	461,753	1,084,364
Miscellaneous Wood Industries (including Wood Preservation)	17	215	6	221	1,266,609	78,044	4,370,001	3,734,548	8,182,593
FURNITURE AND FIXTURE INDUSTRIES:	109	1,093	251	1,254	5,516,780	148,676	7,557,895	8,758,012	16,464,583
Household Furniture Industry	88	443	118	561	2,513,919	61,357	3,144,012	3,405,543	6,610,912
Office Furniture Industry	4	26	2	28	117,112	4,220	186,525	197,056	387,801
Other Furniture Industries	17	534	131	665	2,885,749	83,099	4,227,358	5,155,413	9,465,870
PAPER AND ALLIED INDUSTRIES:	20	1,137	242	1,379	9,154,833	1,694,502	28,208,157	22,129,404	52,032,063
Asphalt Roofing Products	3	142	14	156	1,083,089	77,135	3,242,788	2,188,999	5,508,922
Paper and Pulp Bag Manufacturers	5	143	79	222	1,183,025	69,965	4,020,432	2,372,817	6,463,214
Other Paper Converters	5	98	42	140	881,071	29,261	1,200,159	2,011,054	3,240,474
Pulp and Paper Mills	3)								
Folding Box and Set-Up Box Manufacturers	1)	754	107	861	6,007,648	1,518,141	19,744,778	15,556,534	36,819,453
Corrugated Box Manufacturers	3)								
PRINTING, PUBLISHING AND ALLIED INDUSTRIES:	218	2,563	960	3,523	19,450,057	359,752	14,199,231	36,499,336	51,058,319
Commercial Printing (3)	104	999	323	1,322	7,452,556	125,484	6,174,631	11,029,872	17,329,987
Platemaking (including Engraving), Typesetting and									
Bookbinding for the Trade (4)	20	138	59	197	1,084,201	20,684	652,656	1,466,019	2,139,359
Publishing Only	16	39	36	75	371,239	-	330,021	895,636	1,225,657
Printing and Publishing	78	1,387	542	1,929	10,542,061	213,584	7,041,923	23,107,809	30,363,316
PRIMARY METAL INDUSTRIES:	23	2,646	141	2,787	20,253,180	3,115,259	90,740,232	40,287,161	134,142,652
Iron and Steel Mills	4	614	39	653	5,124,990	847,957	7,341,147	9,162,410	17,351,514
Iron Foundries	6	290	9	299	1,851,250	274,891	2,620,835	3,505,872	6,401,598
Metal Rolling, Casting and Extruding	4	29	5	34	175,499	16,171	678,934	331,505	1,027,610
Steel Pipe and Tube Mills	4)								
Smelting and Refining	1)	1,713	88	1,801	13,101,441	1,976,240	80,098,316	27,287,374	109,361,930
Aluminum Rolling, Casting and Extruding	4)								

PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES - ALBERTA - 1968 (Continued)

	Estab- lishments No.	Employees			Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials and Supplies Used \$	Value Added* \$	Value of Shipments of Goods of Own Manufacture \$
		Male No.	Female No.	Total No.					
METAL FABRICATING INDUSTRIES: (except Machinery and Transportation Equipment Industries)	210	4,802	384	5,186	30,855,809	807,638	44,957,573	57,216,446	102,981,657
Boiler and Plate Works	5	261	15	276	1,652,032	31,652	2,034,826	2,496,409	4,562,887
Fabricated Structural Metal Industry	14	1,251	60	1,311	8,830,856	201,676	13,063,385	21,207,141	34,472,202
Ornamental and Architectural Metal Industry	32	663	156	819	4,029,573	88,350	6,339,640	7,399,132	13,827,122
Metal Stamping, Pressing and Coating Industry	38	764	62	826	4,545,541	122,423	9,098,726	8,877,568	18,098,717
Wire and Wire Products Manufacturers	5	111	6	117	703,105	32,700	1,636,433	1,389,195	3,058,328
Hardware, Tool and Cutlery Manufacturers	7	63	4	67	354,791	8,604	183,857	486,130	678,591
Heating Equipment Manufacturers	5	57	3	60	353,776	5,052	441,914	695,371	1,142,337
Machine Shops	88	1,245	61	1,306	8,051,385	239,319	7,819,626	10,979,206	19,038,151
Miscellaneous Metal Fabricating Industries, n.e.s.	16	387	17	404	2,334,750	77,862	4,339,166	3,686,294	8,103,322
MACHINERY INDUSTRIES: (except Electrical Machinery)	45	1,051	70	1,121	6,747,942	310,365	12,019,934	11,851,115	24,181,414
Agricultural Implement Industry	16	380	21	401	2,109,814	140,520	3,627,869	3,156,946	6,925,335
Miscellaneous Machinery and Equipment Manufacturers, n.e.s.	29	671	49	720	4,638,128	169,845	8,392,065	8,694,169	17,256,079
TRANSPORTATION EQUIPMENT INDUSTRIES:	58	2,443	222	2,665	13,452,007	462,293	29,310,064	19,685,877	49,458,234
Truck Body and Trailer Manufacturers	46	1,361	119	1,480	6,139,591	166,050	21,010,630	9,608,222	30,784,902
Boat Building and Repairs	4	14	-	14	51,058	4,048	51,782	129,880	185,710
Aircraft and Parts Manufacturers	11	-	-	-	-	-	-	-	-
Motor Vehicle Parts and Accessories Manufacturers	5	1,068	103	1,171	7,261,358	292,195	8,247,652	9,947,775	18,487,622
Miscellaneous Vehicle Manufacturers, n.e.s.	2	-	-	-	-	-	-	-	-
ELECTRICAL PRODUCTS INDUSTRIES:	17	419	191	610	3,005,602	216,790	12,708,395	10,557,896	23,483,081
Communications Equipment Manufacturers	6	46	139	185	685,464	13,284	2,294,575	2,447,461	4,755,320
Manufacturers of Electrical Industrial Equipment	4	-	-	-	-	-	-	-	-
Battery Manufacturers	2	350	49	399	2,177,041	200,575	10,174,685	7,616,247	17,991,507
Manufacturers of Electric Wire and Cable	2	-	-	-	-	-	-	-	-
Manufacturers of Miscellaneous Electrical Products	3	23	3	26	143,097	2,931	239,135	494,188	736,254
NON-METALLIC MINERAL PRODUCTS INDUSTRIES:	105	3,126	439	3,565	21,015,312	3,774,604	34,230,839	59,020,709	97,026,152
Concrete Products Manufacturers	33	821	27	848	4,658,100	278,696	7,074,218	10,558,983	17,912,897
Ready-Mix Concrete Manufacturers	38	642	36	678	4,132,417	748,703	13,074,046	10,964,126	24,787,875
Clay Products (domestic clays)	5	-	-	-	-	-	-	-	-
Clay Products (imported clays)	5	340	46	386	2,044,253	173,501	1,298,532	3,275,747	4,747,780
Lime Manufacturers	2	-	-	-	-	-	-	-	-
Gypsum Products Manufacturers	2	-	-	-	-	-	-	-	-
Cement Manufacturers	3	-	-	-	-	-	-	-	-
Stone Products Manufacturers	2	1,266	325	1,591	9,823,007	2,432,400	12,257,405	32,908,379	47,598,184
Mineral Wool Manufacturers	1	-	-	-	-	-	-	-	-
Glass Manufacturers	3	-	-	-	-	-	-	-	-
Glass Products Manufacturers	4	-	-	-	-	-	-	-	-
Miscellaneous Non-Metallic Mineral Products, n.e.s.	7	57	5	62	357,535	139,304	526,638	1,313,474	1,979,416
PETROLEUM AND COAL PRODUCTS INDUSTRIES:	14	1,015	44	1,059	8,645,449	2,007,351	116,135,722	35,648,883	153,791,956
Petroleum Refineries	7	-	-	-	-	-	-	-	-
Manufacturers of Lubricating Oils and Greases	2	987	43	1,030	8,492,074	1,996,372	115,644,365	35,250,186	152,890,923
Other Petroleum and Coal Products Industries	5	28	1	29	153,375	10,979	491,357	398,697	901,033
CHEMICAL AND CHEMICAL PRODUCTS INDUSTRIES:	43	2,167	166	2,333	17,602,896	5,635,429	43,239,677	61,217,444	110,092,550
Manufacturers of Soaps and Cleaning Compounds	7	54	19	73	374,727	16,947	1,159,843	970,105	2,146,895
Manufacturers of Industrial Chemicals	11	1,404	96	1,500	11,597,865	4,761,530	29,027,291	43,939,332	77,728,153
Manufacturers of Printing Inks	4	17	3	20	114,684	5,310	157,371	189,572	352,253
Explosives and Ammunition Manufacturers	2	-	-	-	-	-	-	-	-
Manufacturers of Plastics and Synthetic Resins	5	614	37	651	5,043,031	836,687	10,955,018	15,153,706	26,945,411
Paint and Varnish Manufacturers	3	-	-	-	-	-	-	-	-
Other Chemical Industries	11	78	11	89	472,569	14,955	1,940,154	964,729	2,919,838
OTHER MANUFACTURING INDUSTRIES:	177	1,519	362	1,881	9,442,109	451,398	17,504,993	20,081,313	38,037,704
Ophthalmic Goods Manufacturers	10	116	37	153	627,082	10,077	836,931	1,083,468	1,930,476
Dental Laboratories	58	179	78	257	1,262,329	20,591	460,321	1,960,983	2,441,895
Jewellery and Silverware Manufacturers	5	23	12	35	130,039	4,279	117,672	150,133	272,084
Broom, Brush and Mop Industry	3	5	1	6	32,400	1,287	43,218	69,141	113,646
Plastic Fabricators, n.e.s.	28	276	77	353	1,715,693	102,042	2,969,456	2,869,649	5,941,147
Sporting Goods Industry	5	18	7	25	75,875	3,241	107,785	160,238	271,264
Signs and Displays Industry	36	243	33	276	1,367,457	53,386	904,989	2,105,594	3,063,969
Stamp and Stencil (Rubber and Metal) Manufacturers	6	27	3	30	145,989	3,998	104,932	250,926	359,856
Instrument and Related Products Manufacturers	4	38	33	71	314,683	6,897	1,323,292	892,757	2,222,946
Artificial Ice Manufacturers	3	-	-	-	-	-	-	-	-
Fountain Pen and Pencil Manufacturers	1	-	-	-	-	-	-	-	-
Fur Dressing and Dyeing	2	-	-	-	-	-	-	-	-
Model and Pattern Manufacturers	2	-	-	-	-	-	-	-	-
Orthopaedic and Surgical Appliance Manufacturers	2	-	-	-	-	-	-	-	-
Statuary, Art Goods, Regalia and Novelty Manufacturers	1	594	81	675	3,770,582	245,600	10,636,397	10,538,424	21,420,421
Venetian Blind Manufacturers	4	-	-	-	-	-	-	-	-
Other Industries, n.e.s.	1	-	-	-	-	-	-	-	-
Rubber Industries	4	-	-	-	-	-	-	-	-
Knitting Mills	2	-	-	-	-	-	-	-	-
GRAND TOTALS -- ALBERTA	1,848	39,800	8,757	48,557	274,248,968	26,328,237	1,019,104,963	603,728,627	1,649,161,827

* "Value Added" does not include change of inventory of "Goods in Process" and "Finished Goods"

(1) Rubber Industries - Rubber tire and tube manufacturers, 2; Other rubber industries, 2 -- included in Other Manufacturing Industries

(2) Knitting Mills - Other knitting mills, 2 -- included in Other Manufacturing Industries

(3) Commercial Printing, published in earlier years as two industries; "Printing and Bookbinding" and "Lithographing"

(4) Platemaking (including engraving), Typesetting and Bookbinding for the Trade -- published in 1962 and earlier years as two industries; "Engraving and Duplicate Plates" and "Trade Composition or Typesetting."

Table 9
PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES
EDMONTON - 1968

	Estab- lishments No.	Employees			Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials, and Supplies Used \$	Value Added* \$	Value of Shipments of Goods of Own Manufacture \$
		Male No.	Female No.	Total No.					
FOOD AND BEVERAGE INDUSTRIES:	95	4,689	1,251	5,940	34,352,340	1,765,918	192,671,631	62,681,445	257,118,994
Meat Products Industries:									
Slaughtering and Meat Packing Plants (including Animal Oils and Fats Plants, Sausage and Sausage Casing Manufacturers)	11	2,491	499	2,990	19,667,389	606,130	149,335,553	30,109,704	180,051,387
Dairy Products Industries:									
Butter and Cheese Plants) Pasteurizing Plants) Ice Cream Manufacturers)	6	833	126	959	5,303,320	400,319	16,100,727	10,469,835	26,970,881
Grain Mills:									
Feed Manufacturers	13	187	16	203	1,307,042	131,835	10,305,627	2,966,079	13,403,641
Bakery Products Industries:									
Bakeries	47	541	316	857	3,997,255	251,969	5,181,324	7,058,833	12,492,126
Beverage Manufacturers:									
Soft Drink Manufacturers	4	262	24	286	1,500,024	145,592	3,022,616	3,686,342	6,854,550
Breweries	3	193	17	210	1,503,836	113,677	2,241,437	5,922,894	8,278,008
Other Food Processors:									
Biscuit Manufacturers	1)								
Breakfast Cereal Manufacturers	1)								
Confectionery Manufacturers	1)								
Flour Mills	1)								
Fruit and Vegetable Canners and Preservers	1)	182	253	435	1,073,474	116,296	6,484,347	2,467,758	9,068,401
Macaroni Manufacturers	1)								
Miscellaneous Food Manufacturers, n.e.s.	2)								
Poultry Processors	3)								
RUBBER INDUSTRIES (1)									
LEATHER INDUSTRIES (2)									
TEXTILE INDUSTRIES (3)									
KNITTING MILLS (4)									
CLOTHING INDUSTRIES:	12	340	1,545	1,885	7,501,481	75,630	9,793,323	12,571,526	22,440,479
Men's Clothing Factories	9)								
Women's Clothing Factories	2)	340	1,545	1,885	7,501,481	75,630	9,793,323	12,571,526	22,440,479
Fur Goods	1)								
WOOD INDUSTRIES:	34	745	85	830	3,700,056	183,778	6,611,302	8,225,856	15,020,936
Sash and Door and Planing Mills	24	470	38	508	2,619,627	84,253	4,334,633	3,601,972	8,020,858
Veneer and Plywood Mills	1)								
Wooden Box Factories	2)								
Coffin and Casket Industry	3)	275	47	322	1,080,429	99,525	2,276,669	4,623,884	7,000,078
Wood Preservation	1)								
Miscellaneous Wood Products, n.e.s.	3)								
FURNITURE AND FIXTURE INDUSTRIES:	41	628	145	773	3,297,127	89,043	4,583,307	5,399,468	10,071,818
Household Furniture Industries	31	160	36	196	842,507	21,332	938,823	1,102,796	2,062,951
Office Furniture Industries	1)								
Other Furniture Industries	9)	468	109	577	2,454,620	67,711	3,644,484	4,296,672	8,008,867
PAPER AND ALLIED INDUSTRIES:	6	225	47	272	1,768,905	161,601	4,230,457	2,968,972	7,361,030
Pulp and Paper Mills	1)								
Asphalt Roofing Manufacturers	1)								
Folding Box and Set-Up Box Manufacturers	1)								
Corrugated Box Manufacturers	1)	225	47	272	1,768,905	161,601	4,230,457	2,968,972	7,361,030
Paper Bag Manufacturers	1)								
Miscellaneous Paper Converters	1)								
PRINTING, PUBLISHING AND ALLIED INDUSTRIES:	65	862	348	1,210	7,143,496	107,634	6,265,529	14,176,854	20,550,017
Commercial Printing (5)	41)								
Printing and Publishing	6)	778	298	1,076	6,497,372	97,671	5,839,545	13,170,362	19,107,578
Plate Making (including engraving)									
Typesetting and Bookbinding for the Trade (6)	10	66	32	98	532,054	9,963	325,560	737,020	1,072,543
Publishing Only	8	18	18	36	114,070	-	100,424	269,472	369,896
PRIMARY METAL INDUSTRIES (7)									
METAL FABRICATING INDUSTRIES: (Except Machinery and Transportation Equipment Industries)	107	2,277	182	2,459	14,489,912	344,045	19,666,643	24,323,145	44,333,833
Fabricated Structural Metal Industry	6	467	20	487	3,158,218	48,844	4,761,851	5,505,350	10,316,045
Ornamental and Architectural Metal Industry	17	301	68	369	1,794,478	47,454	3,254,039	2,816,023	6,117,516
Metal Stamping, Pressing and Coating Industry	25	440	37	477	2,729,084	73,873	4,964,442	5,193,801	10,232,118
Hardware, Tool and Cutlery Manufacturers	4	40	2	42	229,777	5,046	115,731	303,607	424,384
Machine Shops	42	745	36	781	4,777,750	134,585	4,646,706	7,319,545	12,100,836
Boiler and Plate Works	2)								
Heating and Equipment Manufacturers	3)								
Wire and Wire Products Manufacturers	3)	284	19	303	1,800,605	34,243	1,923,874	3,184,819	5,142,936
Miscellaneous Metal Fabricating Industries	5)								
MACHINERY INDUSTRIES: (except Electrical Machinery)	13	235	25	260	1,575,350	81,837	1,719,851	3,003,103	4,804,791
Miscellaneous Machinery and Equipment Manufacturers, n.e.s.	13	235	25	260	1,575,350	81,837	1,719,851	3,003,103	4,804,791
TRANSPORTATION EQUIPMENT INDUSTRIES:	25	1,022	97	1,119	6,250,345	161,513	5,664,443	7,300,169	13,126,125
Aircraft and Parts Manufacturers	5)								
Truck Body and Trailer Manufacturers	18)	1,022	97	1,119	6,250,345	161,513	5,664,443	7,300,169	13,126,125
Motor Vehicle Parts and Accessories Manufacturers	2)								
ELECTRICAL PRODUCTS INDUSTRIES (8)									
NON-METALLIC MINERAL PRODUCTS INDUSTRIES:									
Concrete Products Manufacturers	10	399	12	411	2,362,741	158,420	3,863,975	5,644,832	9,667,227
Ready-Mix Concrete Manufacturers	7	346	23	369	2,317,658	444,390	5,879,513	5,808,639	12,132,542
Cement Manufacturers	2)								
Clay Products (Domestic Clays)	1)								
Stone Products Manufacturers	1)								
Mineral Wool Manufacturers	1)	513	71	584	3,882,593	1,019,177	5,015,431	19,947,014	25,981,622
Glass Products Manufacturers	2)								
Miscellaneous Non-Metallic Mineral Products Industries, n.e.s.	3)								

PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES - CALGARY 1968 (Continued)

	Estab- lishments No.	Employees			Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials and Supplies Used \$	Value Added* \$	Value of Shipments of Goods of Own Manufacture \$
		Male No.	Female No.	Total No.					
CLOTHING INDUSTRIES:	8	44	103	147	517,596	10,513	587,950	688,363	1,286,826
Men's Clothing Factories	4)								
Women's Clothing Factories	2)								
Fur Goods Industry	1)	44	103	147	517,596	10,513	587,950	688,363	1,286,826
Hat and Cap Industry	1)								
WOOD INDUSTRIES:	28	1,168	172	1,340	7,230,166	222,509	13,217,527	8,718,971	22,159,007
Sash and Door and Planing Mills	17	1,096	150	1,246	6,830,136	199,959	11,565,873	7,975,618	19,741,450
Coffin and Casket Industry	5)								
Wooden Box Factories	3)								
Wood Preservation	1)	72	22	94	400,030	22,550	1,651,654	743,353	2,417,557
Miscellaneous Wood Products, n.e.s.	2)								
FURNITURE AND FURNITURE FIXTURES:	43	319	90	409	1,936,607	48,370	2,614,884	2,954,333	5,617,587
Household Furniture Industry	32	227	66	293	1,388,366	28,762	1,845,485	1,898,536	3,772,783
Office Furniture Industries	3)								
Other Furniture Industries	8)	92	24	116	548,241	19,608	769,399	1,055,797	1,844,804
PAPER AND ALLIED INDUSTRIES:	10	402	166	568	3,438,261	166,950	10,060,508	7,569,094	17,796,552
Asphalt Roofing Manufacturers	1)								
Corrugated Box Manufacturers	2)								
Paper Bag Manufacturers	4)	402	166	568	3,438,261	166,950	10,060,508	7,569,094	17,796,552
Miscellaneous Paper Converters	3)								
PRINTING, PUBLISHING AND ALLIED INDUSTRIES:	67	1,142	371	1,513	8,779,165	178,036	6,236,612	15,941,715	22,356,363
Commercial Printing (4)	47	508	152	660	3,716,419	58,120	3,200,309	5,474,219	8,732,648
Plate Making (Including Engraving)									
Typesetting and Bookbinding for the Trade (5)	10	72	27	99	552,147	10,721	327,096	728,999	1,066,816
Publishing Only	7)								
Printing and Publishing	3)	562	192	754	4,510,599	109,195	2,709,207	9,738,407	12,556,899
PRIMARY METAL INDUSTRIES:	11	607	23	630	4,571,446	549,971	22,515,691	7,376,611	30,442,273
Aluminum Rolling, Casting and Extruding	2)								
Iron Foundries	2)								
Iron and Steel Mills	2)	607	23	630	4,571,446	549,971	22,515,691	7,376,611	30,442,273
Metal Rolling, Casting and Extruding	3)								
Steel Pipe and Tube Mills	2)								
METAL FABRICATING INDUSTRIES: (except Machinery and Transportation Equipment Industries)	60	2,049	177	2,226	13,767,669	312,955	19,269,059	22,657,686	42,239,700
Ornamental and Architectural Metal Industry	14	361	88	449	2,233,195	40,821	3,082,401	4,579,884	7,703,106
Metal Stamping, Pressing and Coating Industry	8	270	22	292	1,494,847	32,424	2,983,919	2,723,418	5,739,761
Machine Shops	21	366	13	379	2,495,511	72,579	2,275,658	2,512,143	4,860,380
Fabricated Structural Metal Industry	5	694	38	732	5,097,679	102,574	5,050,527	8,963,705	14,116,806
Boiler and Plate Works	1)								
Hardware, Tool and Cutlery Manufacturers	2)								
Heating Equipment Manufacturers	1)	170	7	177	1,070,838	38,209	2,508,102	1,755,322	4,301,633
Wire and Wire Products Manufacturers	2)								
Miscellaneous Metal Fabricating Industries, n.e.s.	6	188	9	197	1,375,599	26,348	3,368,452	2,123,214	5,518,014
MACHINERY INDUSTRIES: (Except Electrical Machinery)	15	553	32	585	3,790,421	150,606	7,745,396	6,773,794	14,669,796
Agricultural Implement Industry	5	156	10	166	913,497	72,554	1,766,022	1,493,157	3,331,733
Miscellaneous Machinery and Equipment Manufacturers, n.e.s.	10	397	22	419	2,876,924	78,052	5,979,374	5,280,637	11,338,063
TRANSPORTATION EQUIPMENT INDUSTRIES:	23	559	51	610	3,171,683	196,836	6,899,269	5,762,241	12,858,346
Truck Body and Trailer Manufacturers	11	181	24	205	623,392	15,136	1,953,633	723,657	2,692,426
Aircraft and Parts Manufacturers	5)								
Boat Building and Repairs	3)								
Motor Vehicle Parts and Accessories Manufacturers	2)	378	27	405	2,548,291	181,700	4,945,636	5,038,584	10,165,920
Miscellaneous Vehicle Manufacturers, n.e.s.	2)								
ELECTRICAL PRODUCTS INDUSTRIES:	9	191	37	228	1,257,653	109,401	5,883,396	3,113,069	9,105,866
Battery Manufacturers	2)								
Communications Equipment Manufacturers	2)								
Manufacturers of Electric Wire and Cable	1)	191	37	228	1,257,653	109,401	5,883,396	3,113,069	9,105,866
Manufacturers of Electrical Industrial Equipment	2)								
Manufacturers of Miscellaneous Electrical Products	2)								
NON-METALLIC MINERAL PRODUCTS INDUSTRIES:	21	611	21	632	3,889,670	383,541	9,246,816	11,400,652	21,031,009
Concrete Products Manufacturers	11	336	12	348	1,886,325	95,473	2,524,137	4,033,693	6,653,303
Ready-Mix Concrete Manufacturers	3)								
Clay Products (Imported Clays)	1)								
Stone Products Manufacturers	1)								
Glass Products Manufacturers	2)	275	9	284	2,003,345	288,068	6,722,679	7,366,959	14,377,706
Gypsum Products Manufacturers	2)								
Miscellaneous Non-Metallic Mineral Products Industries, n.e.s.	1)								
PETROLEUM AND COAL PRODUCTS INDUSTRIES (6)									
CHEMICAL AND CHEMICAL PRODUCTS INDUSTRIES:	16	749	45	794	5,588,129	1,311,170	13,864,194	18,121,349	33,296,713
Explosive and Ammunition Manufacturers	1)								
Manufacturers of Plastics and Synthetic Resins	1)								
Manufacturers of Industrial Chemicals	2)								
Paint and Varnish Manufacturers	1)	749	45	794	5,588,129	1,311,170	13,864,194	18,121,349	33,296,713
Manufacturers of Printing Inks	2)								
Manufacturers of Soaps and Cleaning Compounds	2)								
Miscellaneous Chemical Industry, n.e.s.	7)								
OTHER MANUFACTURING INDUSTRIES:	74	976	202	1,178	6,967,956	946,229	42,235,683	19,432,390	62,614,302
Dental Laboratories	20	64	26	90	452,914	8,671	156,121	685,921	850,713
Plastic Fabricators, n.e.s.	11	87	16	103	425,906	33,042	694,187	813,518	1,540,747
Signs and Displays	14	91	16	107	480,914	22,774	330,078	949,642	1,302,494
Artificial Ice Manufacturers	2)								
Broom, Brush and Mop Industry	2)								
Fountain Pen and Pencil Manufacturers	1)								
Fur Dressing and Dyeing Industry	1)								
Instrument and Related Products Manufacturers	3)								
Model and Pattern Manufacturers	1)								
Ophthalmic Goods Manufacturers	4)								
Sporting Goods Industry	1)	734	144	878	5,608,222	881,742	41,055,297	16,983,309	58,920,348
Stamp and Stencil (Rubber and Metal) Manufacturers	2)								
Venetian Blind Manufacturers	2)								
Rubber Industries	1)								
Leather Industries	4)								
Knitting Mills	1)								
Petroleum and Coal Products Industries	4)								
GRAND TOTALS - CALGARY	481	12,513	2,398	14,911	87,566,393	6,247,413	303,132,912	190,190,761	499,571,086

PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES - CALGARY 1968 (Continued)

- * "Value Added" does not include change of inventory of "Goods in Process" and "Finished Goods"
- (1) Rubber Industries - Rubber tire and tube manufacturers, 1 -- included in Other Manufacturing Industries
- (2) Leather Industries - Leather tanneries, 1; Shoe factories, 1; Miscellaneous leather products manufacturers, 2; -- included in Other Manufacturing Industries
- (3) Knitting Mills - Other knitting mills, 1; -- included in Other Manufacturing Industries
- (4) Commercial Printing - published in earlier years as two industries "Printing and Bookbinding" and "Lithographing"
- (5) Platemaking (including Engraving), Typesetting and Bookbinding for the Trade - published in 1962 and earlier years as two industries: "Engraving and duplicate plates" and "Trade composition or typesetting"
- (6) Petroleum and Coal Products Industries - Petroleum refineries, 2; Other petroleum and coal products industries, 2; -- included in Other Manufacturing Industries

Table 11
PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES
LETHBRIDGE - 1968

	Estab- lishments No.	Employees			Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials and Supplies Used \$	Value Added*	Value of Shipments of Goods of Own Manufacture \$
	No.	Male No.	Female No.	Total No.				\$	
FOOD AND BEVERAGE INDUSTRIES:	24	1,030	187	1,217	6,644,868	638,111	80,203,064	17,989,479	98,830,654
Bakery Products Industries:									
Bakeries	5	68	25	93	494,342	33,432	472,707	683,116	1,189,255
Beverage Manufacturers:									
Soft Drink Manufacturers	3	62	6	68	264,323	28,175	455,636	613,266	1,097,077
Grain Mills:									
Feed Manufacturers	3	30	2	32	273,231	42,211	3,680,850	733,240	4,456,301
Other Food Processors:									
Breweries	1)								
Dairy Products (including Butter and Cheese Plants, Pasteurizing Plants)	3)								
Flour Mills	1)								
Fruit and Vegetable Canners and Preservers	1)	870	154	1,024	5,612,972	534,293	75,593,871	15,959,857	92,088,021
Macaroni Manufacturers	1)								
Poultry Processors	1)								
Slaughtering and Meat Packing Plants (including Sausage and Sausage Casing Manufacturers)	4)								
Vegetable Oil Mills	1)								
TEXTILE INDUSTRIES (1)									
CLOTHING INDUSTRIES (2)									
WOOD INDUSTRIES:	5	41	1	42	193,305	6,748	402,428	133,270	542,446
Sash and Door and Planing Mills	5	41	1	42	193,305	6,748	402,428	133,270	542,446
FURNITURE AND FIXTURE INDUSTRIES:	6	26	8	34	150,109	4,397	163,272	196,212	363,881
Household Furniture Industry	6	26	8	34	150,109	4,397	163,272	196,212	363,881
PRINTING, PUBLISHING AND ALLIED INDUSTRIES (3)									
METAL FABRICATING INDUSTRIES: (Except Machinery and Transportation Equipment Industries) (4)									
MACHINERY INDUSTRIES: (Except Electrical Machinery)	4	66	4	70	356,131	19,203	677,543	713,418	1,410,164
Agricultural Implement Industry	3)	66	4	70	356,131	19,203	677,543	713,418	1,410,164
Miscellaneous Machinery and Equipment Manufacturers, n.e.s. 1)									
TRANSPORTATION EQUIPMENT INDUSTRIES:	7	342	27	369	1,606,554	31,219	6,226,366	2,641,098	8,898,683
Truck Body and Trailer Manufacturers	5)								
Motor Vehicle Parts and Accessories Manufacturers	1)	342	27	369	1,605,554	31,219	6,226,366	2,641,098	8,898,683
Boat Building and Repairs	1)								
ELECTRICAL PRODUCTS INDUSTRIES (5)									
NON-METALLIC MINERAL PRODUCTS INDUSTRIES:	9	97	5	102	558,229	63,757	1,218,977	1,206,964	2,489,698
Concrete Products Manufacturers	5)								
Ready-Mix Concrete Manufacturers	2)								
Clay Products Manufacturers	1)	97	5	102	558,229	63,757	1,218,977	1,206,964	2,489,698
Miscellaneous Non-Metallic Mineral Products, n.e.s. 1)									
OTHER MANUFACTURING INDUSTRIES:	27	402	152	554	2,637,312	128,520	5,833,043	11,223,203	17,164,766
Dental Laboratories	5	6	5	11	65,404	709	34,956	116,924	152,589
Signs and Displays Industry	4	30	3	33	143,001	8,606	100,364	216,285	325,255
Clothing Industries	1)								
Electrical Products Industries	1)								
Printing, Publishing and Allied Industries	5)								
Textile Industries	1)	366	144	510	2,428,907	119,205	5,697,723	10,889,994	16,706,922
Venetian Blind Manufacturers	1)								
Metal Fabricating Industries (Except Machinery and Transportation Equipment Industries)	9)								
GRAND TOTALS - LETHBRIDGE	82	2,004	384	2,388	12,146,508	891,955	94,724,693	34,103,644	129,720,292

- * "Value Added" does not include change of inventory of "Goods in Process" and "Finished Goods"
- (1) Textile Industries - Canvas products, 1 -- included in Other Manufacturing Industries
- (2) Clothing Industries - Women's clothing factories, 1 -- included in Other Manufacturing Industries
- (3) Printing, Publishing and Allied Industries - Commercial printing, 4; printing and publishing, 1; -- included in Other Manufacturing Industries
- (4) Metal Fabricating Industries (Except Machinery and Transportation Equipment Industries) - Machine shops, 3; boiler and plate works, 1; fabricated structural metal industry, 2; metal stamping, pressing and coating industry, 2; miscellaneous metal fabricating industries, 1 -- included in Other Manufacturing Industries
- (5) Electrical Products Industries - Communication equipment manufacturers, 1 -- included in Other Manufacturing Industries.

Table 12
PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES
MEDICINE HAT-REDCLIFF - 1968

	Estab- lishments No.	Employees			Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials and Supplies Used \$	Value Added* \$	Value of Shipments of Goods of Own Manufacture \$
		Male No.	Female No.	Total No.					
FOOD AND BEVERAGE INDUSTRIES:	19	428	123	551	2,642,403	188,034	23,158,057	4,349,649	27,695,740
Bakery Products Industries									
Bakeries	4	10	20	30	101,526	6,613	104,890	129,387	240,890
Beverage Manufacturers									
Soft Drink Manufacturers	3	31	1	32	167,283	16,441	226,369	247,189	489,999
Grain Mills									
Feed Manufacturers	3	17	3	20	108,183	13,606	1,204,686	243,954	1,462,246
Other Food Processors									
Dairy Products (pasteurizing plants)	2)								
Flour Mills	2)								
Fruit and Vegetable Canners and Preservers	1)								
Slaughtering and Meat Packing Plants	2)	370	99	469	2,265,411	151,374	21,622,112	3,729,119	25,502,605
Vegetable Oil Mills	1)								
Miscellaneous Food Manufacturers, n.e.s.	1)								
FURNITURE AND FIXTURE INDUSTRIES:	3	3	3	6	30,989	1,369	56,628	61,630	119,627
METAL FABRICATING INDUSTRIES: (Except Machinery and Transportation Equipment Industries)	5	91	4	95	378,669	11,565	434,331	777,657	1,223,553
Heating Equipment Manufacturers	1)								
Machine Shops	1)	91	4	95	378,669	11,565	434,331	777,657	1,223,553
Miscellaneous Metal Fabricating Industries	3)								
OTHER MANUFACTURING INDUSTRIES:	22	1,235	307	1,542	8,714,437	1,007,444	16,778,376	15,848,603	33,634,423
Dental Laboratories	2)								
Signs and Displays Industry	1)								
Rubber Industries	1)								
Sash and Door and Planing Mills	2)								
Printing, Publishing and Allied Industries	4)	1,235	307	1,542	8,714,437	1,007,444	16,778,376	15,848,603	33,634,423
Agricultural Implement Industries	1)								
Transportation Equipment Industries	1)								
Non-Metallic Mineral Products Industries	9)								
Chemical and Chemical Products Industries	1)								
GRAND TOTAL - MEDICINE HAT-REDCLIFF	49	1,757	437	2,194	11,766,498	1,208,412	40,427,392	21,037,539	62,673,343

* "Value Added" does not include change of inventory of "Goods in Process" and "Finished Goods"

Table 13
PRELIMINARY PRINCIPAL STATISTICS - MANUFACTURING INDUSTRIES
RED DEER - 1968

	Estab- lishments No.	Employees			Salaries and Wages \$	Cost of Fuel and Electricity \$	Cost of Materials and Supplies Used \$	Value Added* \$	Value of Shipments of Goods of Own Manufacture \$
		Male No.	Female No.	Total No.					
FOOD AND BEVERAGE INDUSTRIES:	13	298	38	336	1,859,690	228,528	27,556,478	4,690,028	32,475,034
Bakeries	2)								
Dairy Products (includes Butter and Cheese Plants, Pasteurizing Plants, Condenseries)	4)								
Feed Mills	2)	298	38	336	1,859,690	228,528	27,556,478	4,690,028	32,475,034
Slaughtering and Meat Packing Plants	3)								
Soft Drink Manufacturers	2)								
PRINTING, PUBLISHING AND ALLIED INDUSTRIES:	5	60	17	77	413,778	8,967	182,040	829,785	1,020,792
Commercial Printing	2)								
Printing and Publishing	3)	60	17	77	413,778	8,967	182,040	829,785	1,020,792
OTHER MANUFACTURING INDUSTRIES:	22	203	36	239	1,055,440	66,854	3,979,000	2,589,977	6,635,831
Dental Laboratories	3	5	3	8	32,238	575	15,244	61,384	77,203
Metal Fabricating Industries (Except Machinery and Transportation Equipment Industries)	6)								
Agricultural Implement Industry	2)								
Concrete Products Manufacturers	1)								
Electrical Products Industries	1)								
Furniture and Fixture Industries	1)								
Miscellaneous Machinery and Equipment Manufacturers	1)								
Ophthalmic Goods	1)	198	33	231	1,023,202	66,279	3,963,756	2,528,593	6,558,628
Sash and Door and Planing Mills	2)								
Signs and Displays Industry	1)								
Transportation Equipment Industries	2)								
Wood Preservation	1)								
GRAND TOTAL - RED DEER	40	561	91	652	3,328,908	304,349	31,717,518	8,109,790	40,131,657

* "Value Added" does not include change of inventory of "Goods in Process" and "Finished Goods"

Table 14
VALUE OF MANUFACTURERS' FACTORY SHIPMENTS, BY INDUSTRIAL GROUPS
ALBERTA

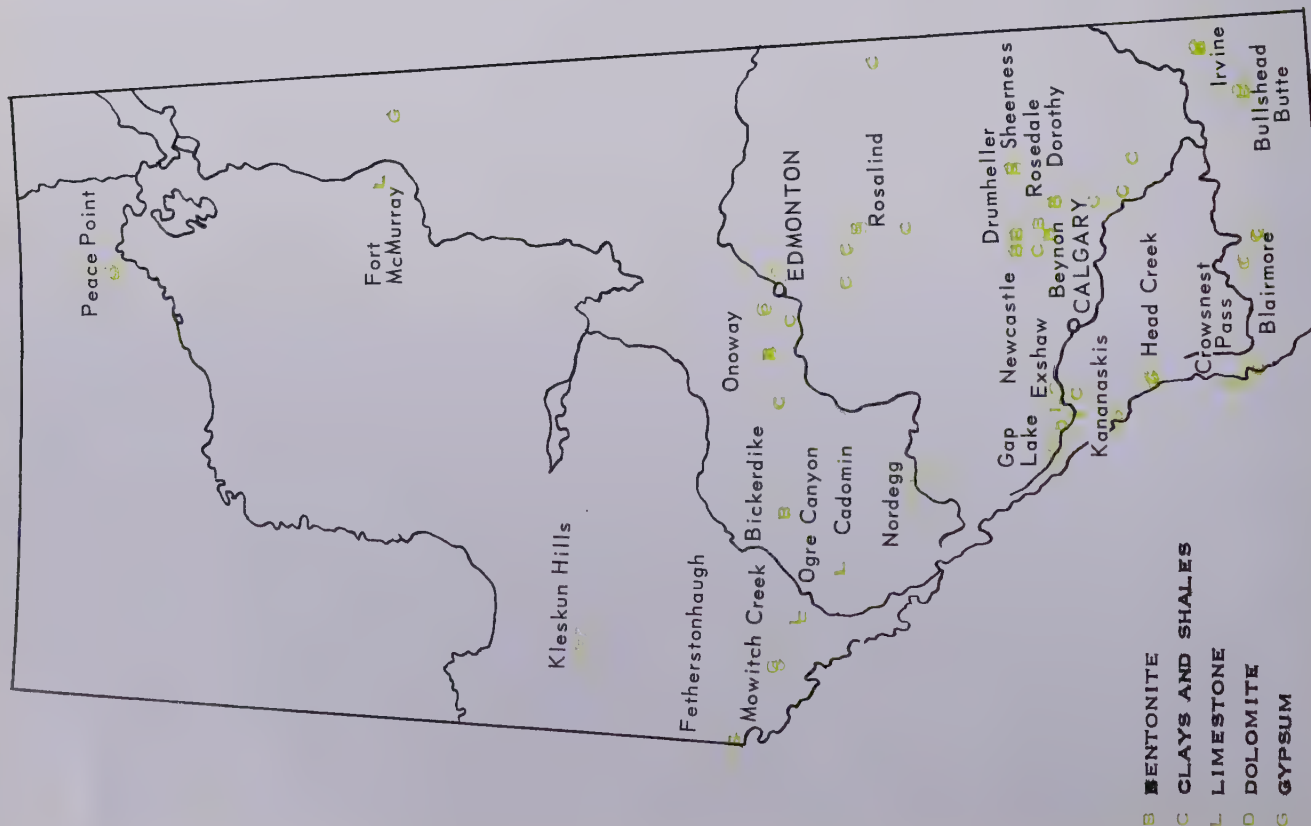
	1949	1952	1954	1956		1957	1959	1961	1962	1963	1964	1965	1967	1968	1969
	\$	\$	\$	\$		\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
	(millions of dollars)					(millions of dollars)									
Food and Beverages	212.8	259.3	263.6	287.7	Food and Beverage Industries	307.0	363.6	394.4	435.2	454.6	501.2	512.7	635.3	682.4	710.0
Textiles	2.0	2.8	4.5	6.0	Textile Industries	6.4	7.7	7.8	8.5	9.4	9.1	10.4	12.2	12.4	12.0
Clothing	6.1	7.6	7.0	8.4	Clothing Industries	9.3	11.2	12.8	15.8	17.6	20.7	22.7	22.0	23.7	25.0
Wood Products	36.9	57.6	54.3	54.7	Wood Industries	41.1	44.9	39.6	43.1	52.9	56.6	58.3	90.0	75.5	85.0
					Furniture and Fixture Industries	7.6	9.3	9.1	10.3	10.5	11.5	12.4	16.8	16.5	17.0
Paper Products	1.9	6.4	7.7	12.3	Paper and Allied Industries	17.4	35.3	41.3	41.4	46.0	45.0	47.4	49.2	52.0	55.0
Printing, Publishing & Allied Industries	11.6	16.0	18.8	23.0	Printing, Publishing and Allied Industries	24.8	28.8	31.5	32.2	33.2	36.6	39.7	47.0	51.1	56.0
Iron and Steel Products	13.8	27.0	34.2	55.2	Primary Metal Industries	35.7	39.2	67.8	45.0	51.0	82.0	87.9	106.7	134.1	140.0
					Metal Fabricating Industries (Except Machinery and Transportation Equipment Industries)	49.8	52.6	55.1	69.6	72.3	80.8	101.8	97.9	103.0	118.0
					Machinery Industries (Except Electrical Machinery)	2.8	2.7	6.7	10.3	14.9	15.3	20.0	25.6	24.2	28.0
Transportation Equipment	12.5	21.7	19.9	24.3	Transportation Equipment Industries	28.4	28.1	14.0	14.7	16.2	16.6	20.5	41.5	49.5	70.0
Non-Ferrous Metal Products (1)	.9	1.3	3.6	17.9											
Electrical Apparatus and Supplies	.4	.5	1.0	3.8	Electrical Products Industries	3.8	5.0	7.0	7.9	8.6	9.9	11.2	20.5	23.5	26.0
Non-Metallic Mineral Products	14.7	23.4	30.1	37.7	Non-Metallic Mineral Products Industries	41.0	51.5	60.5	71.9	65.9	70.9	80.2	91.6	97.0	112.0
Products of Petroleum and Coal	48.2	81.0	102.0	132.8	Petroleum and Coal Products Industries	103.8	108.6	108.6	114.2	125.3	125.4	136.2	145.7	153.8	166.0
Chemical and Allied Products	9.3	11.0	26.0	35.3	Chemical and Chemical Products Industries	41.0	55.3	61.3	73.0	81.0	84.8	91.2	114.9	110.1	99.0
Other Manufacturing (2)	.9	2.8	2.5	4.0	Other Manufacturing Industries (2)	4.6	6.5	17.0	22.4	24.9	27.4	30.7	32.9	40.4	38.0
Total	372.0	518.4	575.2	703.1	Total	724.5	850.3	935.5	1,015.5	1,084.3	1,193.8	1,283.3	1,550.0	1,649.2	1,757.0

(1) Included in "Primary Metal Industries", 1957-1969

(2) Includes: "Leather Products", "Rubber Products", "Knitting"



About 1,000,000 acres of land in the southern region of the province, has been made highly productive through irrigation.



INDUSTRIAL MINERALS

Excepting 10,000 square miles in the northeast corner, Alberta is a sedimentary basin overlain by a thick mantle of glacial till. As a consequence, the mineral wealth of the province is derived principally from the exploitation of non-metallics of glacial and sedimentary origin. Many industrial minerals occur in the Tertiary and Upper Cretaceous sediments where the overburden is shallow; this makes stripping and quarrying low cost methods of extraction.

Industrial minerals, mainly non-metallic and structural materials, are important not only because of their direct contribution to regional growth but also because of the linkage they establish between succeeding stages of production. The importance of these materials is enhanced because of their close association with the petroleum and petrochemical industries, both as input and processing requirements and as by-products or co-products at the extractive stage.

Most industrial minerals are basic material inputs used in indigenous industries and construction of all kinds. Of low value per unit of weight or volume, they cannot be transported long distances without significantly increasing their cost. For this reason industrial minerals do not generally enter into export trade. Their increasing use reflects Alberta's industrial growth and diversification.

The total value of production of industrial minerals increased from \$1 million in 1936 to \$115 million in 1968. This represents 10.6 per cent of total mineral production value.

More detailed technical explanations of required specifications, as well as properties and location of industrial mineral deposits will be provided upon request by the Research Council of Alberta.

ABRASIVES

Abrasives are used to cut, grind, polish, abrade, scour, or clean by removing solid material by rubbing or impact. Specifications depend on the particular abrasive material and its use.

In Alberta, sand for sand blasting is obtained from local deposits of river, beach or dune sand. Other Alberta natural materials which might be potential abrasives are garnet, feldspar, pumicite, and pebbles. Garnet is common in the glacial deposits throughout Alberta and has been concentrated in alluvial gravels, particularly in some parts of the South Saskatchewan and Milk Rivers, but data on the concentrations or

abrasive quality of this garnet are not available. Some glacial and alluvial sands might be sources of feldspar should a demand for it arise. Deposits of pumicite, which is used as an abrasive mostly in cleaning and scouring compounds, are widespread in Alberta. Some information on these deposits is given in the section on cement.

Quartzite pebbles derived from the Cypress Hills conglomerate and washed into stream beds along the northern flank of the Cypress Hills, have been used in ball mills in British Columbia. Tests show them to be comparable in quality to commercially used Danish flint pebbles. Quartzite pebbles derived from the same source — quartzite formations in the Rocky Mountains — and transported by the same agent, rivers, have been deposited in present-day river beds. Gravel from many places in river beds contains more than 80 per cent quartzite pebbles in the fraction greater than 8 millimetres. Some gravels from the North Saskatchewan River between Genesee and Drayton Valley, and from the Athabasca River at Fort Assiniboine and Whitecourt contain more than 90 per cent quartzite pebbles in the same fraction. The colour of these pebbles ranges from white through buff to brown. Some when crushed might be suitable for use in facings such as terrazzo.

BENTONITE

Bentonite is a fine grained, ash-like clay, composed essentially of minerals of the montmorillonite group. A high capacity for ion exchange and a very high surface area are two of bentonite's numerous properties. Bentonite may be broadly classified

Table 15
BENTONITE DEPOSITS OF ALBERTA

Location	Geological Formation or Group	Thickness (feet)	Yield (barrels per ton)	Sand or Silt Content (per cent)	Remarks
Along Rosebud River near Beynon SE 32-27-20-4	Edmonton	3 1/2	51	0.2	Extent unknown; below 2 1/2 foot coal seam.
Along McLeod River 200 yards upstream from CNR bridge near Bickerdike 6-52-18-5	Saunders	6-8	low	--	Inferior decolorizing properties; a small quantity used for cosmetics in the past; under heavy overburden.
In Red Deer River valley near Dorothy	upper part of Bearpaw	20	30	--	Exposed for several miles under low overburden.
Ridge 1 1/2 miles north of Drumheller NW 14-29-20-4	Edmonton	3	56	2.3	Mined intermittently for a number of years; an untreated sample had decolorizing ability 60% of that of commercial Floridin clay.
North flank of Kleskun Hills SE 27-72-4-6	Wapiti	4	40-60	--	Small lenses of limited extent.
Near Irvine NW 30-11-2-4	100 feet from base of Bearpaw	1-5	38	--	Surrounds Cypress Hills on north and west; under 5 - 10 feet of overburden.
Bullshead Butte NE 2-8-7-4	Bearpaw	2	58	--	Small deposit; under 10 - 15 feet of overburden.
Newcastle SE 9-29-20-4	Edmonton	5-10	42-66	4-12	Under light overburden.
Aetna coal mine at Rosedale	Edmonton	0.5-0.7	90	trace	As parting in No. 1 coal seam.
Sheerness	Edmonton	1-5	43-58	0.5-1.7	In overburden above coal seam being strip-mined; brown bentonite overlies olive green.
Rosalind	Edmonton	8-10	50-110	1.2-1.5	Production by Magcobar started in 1959, estimated reserves more than one million tons.
Onoway	Edmonton	up to 5	2-50	-	Production by Baroid started in 1960, estimated reserves more than 300,000 tons.

Source: Research Council of Alberta, Report 66-2, Some Characteristics of Bentonite in Alberta.

into two main types — swelling and non-swelling. In the swelling variety, the predominant exchangeable ion is sodium; in the non-swelling variety it is calcium. Because of its high surface area, bentonite has the ability to adsorb certain impurities from liquids. Treatment with sulphuric acid (activation) increases adsorption properties appreciably.

Bentonite is a very soft rock mined with comparative ease and inexpensively in surface pits. Strict supervision is required to ensure quality control. Processing mainly involves drying, pulverizing and classifying. Consumption of the swelling varieties is much greater than of the non-swelling.

Select swelling bentonite is employed as a binder in the pelletizing of iron mineral concentrates, a use which is expected to increase significantly. Swelling bentonite is used in well drilling fluids where it controls viscosity, prevents the settling of drill cuttings and retains drilling fluid by coating the drill-hole wall. It serves as a binder in moulding sands used by iron and steel foundries and in the pelletizing of zinc concentrates and stock feeds. It is used to plasticize abrasive and ceramic raw mixes, as a filler in paper, rubber, pesticides, cosmetics, medicine products, soaps and cleansers; in sealing such structures as dams, and reservoirs; as an ingredient of aerial bombs in fighting forest fires; and in the strengthening of retaining walls of excavations prior to the placement of concrete or other structural materials.

Some non-swelling bentonite is used in pelletizing stock feed, as a carrier for pesticides, as a binder in some low-temperature foundries, and in certain pet cleansing powders.

Activated bentonite is used in decolourizing vegetable and mineral oils, animal fats, wines, beverages and syrups. It is also used as a catalyst in the refining of liquid hydrocarbons.

Most Alberta bentonite deposits are of the swelling variety. Swelling bentonite is recovered from the Edmonton Formation at Rosalind and Onoway. It is dried, pulverized, and sized for use mainly in drilling muds. Combined daily rated capacity is 180 short tons.

CEMENT

Hydraulic cements have the property of hardening under water. The best known and most widely used is "portland cement" which, when mixed with water and allowed to hydrate, yields a ceramic material used to bind aggregates (crushed stone, gravel and sand) together into "concrete".

Portland cement is a versatile structural and general construction material utilized in sewer and water works, as a paving material for constructing and stabilizing permanent roads, in highway bridges, viaducts and so forth.

Masonry cements are mixtures of portland cement, finely ground limestone, and a plasticizer. They are used as mortar for bricklaying or other masonry work.

Pozzolan is a siliceous material which in itself possesses little cement value. However, in finely divided form and in the presence of moisture, pozzolans react with calcium hydroxide to form compounds possessing cementitious properties. When properly used in cement, pozzolans can retard or prevent alkali-aggregate reaction, increase resistance to sulfate-carrying waters, reduce heat generation in massive structures, increase tensile strength, reduce permeability and improve workability.

In addition, to each of these types may be added an air-entraining agent (such as resin, rosin or other chemicals) which cause, during mixing of concrete, the retention of microscopic air bubbles, giving superior resistance to deterioration by freezing and thawing and to attack by de-icing salts used on concrete roads.

The raw materials used for cement are numerous and can be used in a number of combinations, but essentially they may be divided into four components: lime, silica, alumina, and iron. Raw materials for portland and masonry cements include a calcareous or lime-bearing component such as high calcium limestone, cement rock, marl, coquina and a non-calcareous component such as clay, shale, iron oxide or gypsum; those for pozzolan include diatomaceous earth, opaline cherts and shales, clays, tuffs, pumicites and fly ash. Clay, shale and high-calcium limestone are currently used in Alberta for the production of portland and masonry cements. The small amount of iron oxide required in these cement plants is obtained as a by-product from industries within Alberta or adjacent provinces. Facilities exist in Alberta for bulk and bagged cement shipments by rail and truck. In 1968 production was 799,800 tons of cement, valued at \$16,193,000.

A Devonian limestone formation, 500 feet thick and containing more than 96 per cent CaCO_3 and one to two per cent MgCO_3 , is quarried at Cadomin. The limestone is burned in a plant at Edmonton along with clay. The clay deposits are 50 feet or more thick, containing 62.2 per cent SiO_2 and 19.6 per cent Al_2O_3 .

Marls are earthy, friable accumulations of calcareous material secreted by plants and animals. Over long periods of time the skeletal remains of plants mixed with shells of animals may form beds as much as 30 feet thick, containing material suitable for cement manufacture. Small deposits are widespread in Alberta, such as that underlying the conglomerate capping the Hand Hills, and another northwest of Edmonton at Big Lake.

Coquina is a rock consisting mostly of broken shells. A deposit of coquina consisting of fossil oysters, ranging in thicknesses up to 15 feet, is exposed 12 miles northwest of Cardston, near Hillspring, along the Belly River.

Although no natural pozzolans have been produced in Alberta, pumicite and montmorillonite-bearing clays and shales are available in Cretaceous and Tertiary strata. Deposits have not been tested for pozzolanic properties but some samples contain a high proportion of volcanic glass, an active ingredient in natural pozzolans elsewhere. Pozzolanic properties can be improved by calcination.

Fly ash, an artificial form of pozzolan, is a fine-grained ash consisting mostly of silica, alumina and iron oxide. Fly ash is used in cement for oil wells and in concrete for dams, for stabilizing soils, for making bricks, and as a filler in asphalts, plastics and paints. In Alberta, fly ash is produced at Drumheller, Forestburg and Wabamun in coal-burning power-generating plants. The amount of fly ash recovered depends on the ash content of the coal, the slagging temperature of the ash, the amount of coal burned and the efficiency of the collecting equipment. At Wabamun residue fly ash is upgraded to the American Society for Testing Materials specifications.

CLAY AND CLAY PRODUCTS

Clay is an earthy, easily disintegrated, widely distributed mineral deposit. To date, the better quality clays such as china or kaolin, ball and fire clay have not been found in Alberta. Some good quality deposits of ball and fire clay are known to exist relatively close to Alberta in the Whitemud Formation in southern Saskatchewan. Clay from that area has been used for many years in the potteries at Medicine Hat.

Stoneware clays are similar to low-grade plastic fire clays. Their principal clay mineral is kaolinite. They are used in manufacturing sewer pipe, flue liners, facing brick, pottery, stoneware crocks, jugs and chemical stoneware. Considerable deposits of stoneware and lower grade refractory clays occur in the Whitemud Formation of southeastern Alberta and along the Athabasca River in northeastern Alberta. The Whitemud Formation is exposed in southern Alberta on the flanks of the Cypress Hills, where it consists of up to 25 feet of light grey clay, brown clay and argillaceous silt, in thin beds showing rapid horizontal changes in lithology and ceramic properties. Although they increase in thickness and quality eastward, the deposits in the western part of the Cypress Hills are more accessible and covered by thinner overburden. These clays are in beds about three feet thick, and covered by 10 to 30 feet of overburden, some of which is clay of stoneware grade. Stoneware clay pits are located in the Cypress hills, southeast of Medicine Hat. Many of the clays in the Whitemud Formation could be improved by simple treating or blending.

Some clays lying on the pre-Cretaceous erosion surface of Devonian limestone beneath the oil sands of the McMurray Formation north of Fort McMurray may be of value as semi-fireclays or stoneware clays. They are extremely variable, ranging from clays which have no ceramic value to semi-fireclays.

Common clays and shales are ordinarily a heterogeneous mixture composed of clay minerals and various other minerals such as quartz, feldspar, mica, goethite, siderite, pyrite, carbonaceous material, gypsum, calcite, dolomite, hornblende and many others. Clays and shales suitable for clay products manufacture usually contain 15 to 35 per cent silt-sized quartz. Because of the presence of iron, common clays and shales usually fire to a salmon or red colour. Common clays and shales are usually higher in alkali and iron-bearing minerals and much lower in alumina than the high-quality stoneware clays, fire clays and ball clays. Since shales are less plastic than clays, they must be finely ground when used for extruded ware so that plasticity may be developed or they must be combined with a plastic clay or some plasticizer.

Common clays and shales are the principal raw materials available for the manufacture of clay products. They are used mainly for the manufacture of common and facing brick, structural tile, partition tile, conduit, quarry tile and drain tile.

Common clay and shale deposits are widespread in Alberta. The brick-making qualities of clays and shales in several formations are given in Table

Table 16
CLAYS AND SHALES FOR BRICK AND TILE IN ALBERTA

In the structural clay products industry, four plants are in operation in southeastern Alberta using local clays.

In the porcelain and pottery products industry, five firms are presently operating in Calgary, Athabasca, Medicine Hat and Redcliff.

DIMENSION STONE

Dimension stone is a term applied to stone sold in blocks or slabs of specified shapes or sizes and includes cut stone, rough building stone, ashlar, monumental stone, flagstone, curbstone, and ornamental stone. The value of dimension stone varies from less than \$5 per ton to more than \$200 per ton depending on the type of rock and the amount of cutting, polishing, and buffing it receives. Alberta stone quarry production in 1968 was 142,000 short tons valued at \$ 620,300.

The only dimension stone presently quarried in Alberta is known as Rundle stone. It is a hard, flaggy, medium grey, dolomitic siltstone from the Triassic Spray River Formation at Canmore, and is used as rough building stone. Similar rock along the Spray River has been used at Banff as rock-face ashlar.

Field stone — erratic boulders of granite, gneiss, basic igneous rocks, and quartzite from glacial deposits — is used for interior and exterior facings and decorations on houses and buildings. Pinkish Lower Cambrian St. Piran quartzite from rock slides has been used for building stone at Jasper. Quartzite cobbles have also been used. Similar cobbles are abundant in some river beds in the western part of Alberta. Flat-lying Devonian limestones near Fort McMurray in northwestern Alberta are promising building stones. Small amounts of tufa from Big Hill and Radnor have been used as decorative stone. Although most Cretaceous and Tertiary sandstones have unattractive colours, poor weathering properties, and are soft, some from the Cretaceous Oldman Formation and the Tertiary Paskapoo Formation have good characteristics. These sandstones were quarried for building stone before 1914. Rocks in sills in the Precambrian Kinsella Formation in North Kootenay Pass and certain porphyries and breccias of the Cretaceous Crowsnest volcanic rocks near Coleman make attractive ornamental stone.

System	Formation or Group	Remarks
Lower Cretaceous	Blairmore	Free from drying defects; strippable deposits are few and small; will make good quality brick and tile.
Upper Cretaceous	Alberta	Very low plasticity otherwise suitable for bricks.
Upper Cretaceous	Foremost and Oldman	Variable lithology, highly plastic and difficult to dry; drying difficulty can be overcome by preheating, chemical treatment, or using more sandy clays.
Upper Cretaceous	Bearpaw	Undesirable white scum forms during firing on bricks.
Upper Cretaceous	Edmonton	Similar to Foremost and Oldman Formations, but have higher plasticity and shrinkage; might be improved by preheating or chemical treatment.
Upper Cretaceous	Whitemud	Suitable, but exposed only in Cypress Hills far from manufacturing centres.
Tertiary	Paskapoo	Shaly parts are suitable, but sandstone is more common in outcrops; calcareous shales make buff-colored porous bricks.
Quaternary	Pleistocene	High plasticity and high shrinkage might be overcome by proper treatment; siltier clays are suitable.

DOLOMITE

Dolomite is used chiefly as a flux in the smelting of iron and other metals to control the fluidity of the slag; as a refractory material for patching open hearth furnaces; and as a source of agricultural magnesium. Other uses are in the extraction of magnesia from seawater, in production of basic magnesium carbonate for use as a heat insulator, and as road metal. When ground it can be used as a filler and when sized and of suitable colour it can be used as stucco dash. Although large quantities are available in the Rocky Mountains, few deposits have been tested for usefulness and no dolomite is being quarried in Alberta.

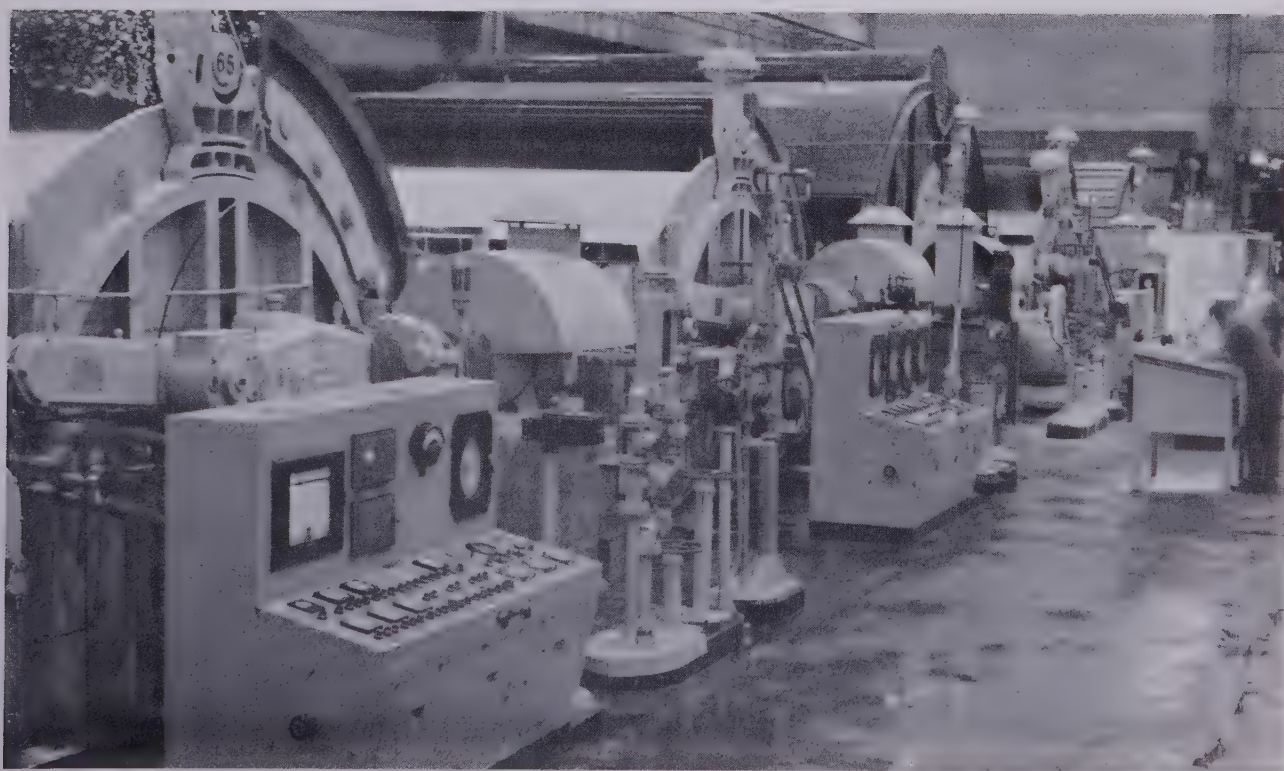
Table 17
DOLOMITE DEPOSITS OF ALBERTA

Location	Thickness (feet)	CaCO ₃ (per cent)	MgCO ₃ (per cent)	Remarks
Kananaskis	200	56.0	42.8	On easternmost mountain just north of railway; mostly pure dolomite interbedded with limestone and magnesium limestone at top and bottom; strikes N 60° W, dips 35° SW.
	500	55.4	43.6	
	70	55.7	44.0	
Gap Lake	40	55.4	44.3	North of highway opposite centre of lake; suitable for quarrying.
Nordeg	250	57.3	41.3	In cut at mile 146 of CNR; brown, medium-grained, compact.

ELEMENTS IN FORMATION WATERS

The formation waters of some oilfields in Alberta carry high concentrations of certain elements. Although none are produced in Alberta, magnesium, bromine, and iodine are included.

Magnesium is used in alloys requiring high strength, light weight, resistance to corrosion, or ability to withstand high temperatures, and as a reducing agent in the production of uranium, titanium, beryllium, and zirconium. It is produced from sea water, dolomite, and magnesite. The concentrations of magnesium in some formation waters produced in Alberta are several times the 1,400 milligrams per litre in sea water. Thus, although reserves of raw materials elsewhere are almost unlimited, magnesium might be profitably extracted from formation waters or brines which contain high concentrations and which have substantial production. The only Canadian producer, most of whose production is exported, uses dolomite as raw material for a plant in Ontario. Production in 1965 was 11,000 tons. Canadian consumption of magnesium for 1967 was 5,000 tons which included 1,500 tons of imported metal.



The huge pulp plant located in Hinton has helped boost production of pulpwood to more than \$4,000,000 per year.

Bromine is used chiefly as ethylene dibromide in gasoline antiknock compounds. It is also used as a bleaching and disinfecting agent, as a fumigating agent, in photography, and in metallurgy for the production of high-purity metals. Bromine is extracted from sea water, which contains 67 milligrams per litre; from well brines that contain 1,300 to 2,000 milligrams per litre; from salt lakes or seas, which contain up to 7,000 milligrams per litre; and from potash deposits, some of which contain up to 0.2 per cent bromine. The concentration of bromine in some formation waters produced in Alberta is more than 10 times that in sea water, and approaches those in well brines from which bromine is extracted in the United States. These figures suggest that bromine might be obtained from local formation waters for use in gasoline. At present, however, reserves elsewhere, and the size of the local market, indicate that production of bromine in Alberta is uneconomic.

Iodine and its compounds are used in many ways: as an antiseptic and disinfecting agent; for human consumption in table salt; for seeding clouds to induce rainfall and to suppress hail; for livestock and poultry feed; in photography; in metallurgy; in contrast mediums for x-rays; and as a radioactive isotope for diagnosis and therapy. Most of the world's iodine is produced from nitrate deposits in Chile; lesser amounts are obtained from oil-well brines in the United States, Japan, and Indonesia. These brines contain from 50 to 70 milligrams of iodine per litre. Some formation waters in Alberta contain up to 44 milligrams of iodine per litre. Although the concentrations of iodine in brines from Alberta are lower than in brines from which iodine is obtained elsewhere, should magnesium or bromine be extracted, iodine might also be recovered.

Table 18
FORMATION WATER WITH ANNUAL PRODUCTION OF MORE THAN 30,000 BARRELS IN 1968 AND
WITH MORE THAN 5,000 MILLIGRAMS OF CALCIUM OR 4,200 MILLIGRAMS OF
MAGNESIUM OR 800 MILLIGRAMS OF BROMINE PER LITRE

Field	Formation	CALCIUM		MAGNESIUM		BROMINE		Annual Water Production
		(milligrams per litre)	(pounds per barrel)	(milligrams per litre)	(pounds per barrel)	(milligrams per litre)	(pounds per barrel)	
Acheson	D-3A	22,857	8.0	3,203	1.1	898	0.31	43,419
Alix	D-2	23,482	8.2	3,563	1.2	961	0.34	78,844
Bonnie Glen	D-3B	46,164	16.2	4,413	1.5	568	0.20	61,916
Carstairs	Elkton A	10,356	3.6	7,495	2.6	0	0	33,582
Clive	D-3A	20,045	7.0	3,504	1.2	936	0.33	201,861
Duhamel	D-3A	15,155	5.3	2,316	0.8	899	0.31	42,494
Erskine	D-3	19,677	6.9	3,238	1.1	413	0.14	520,709
Homeglen Rimbey	D-3	38,682	13.5	3,374	1.2	1,121	0.39	333,739
Leduc-Woodbend	D-3A	38,209	13.4	5,062	1.8	545	0.19	65,092
	D-3B	32,878	14.0	4,839	1.7	1,068	0.37	438,301
Pine Creek	D-3	17,649	6.2	1,590	0.6	319	0.1	438,528
Sturgeon Lake South	D-3	25,343	8.9	3,214	1.1	405	0.14	797,053
Wimborne	D-3A	22,754	7.9	2,593	0.9	961	0.34	144,243
Windfall	D-3A	17,007	6.0	1,736	0.6	335	0.12	519,329
Worsley	D-3G	17,743	6.2	1,882	0.7	393	0.14	705,298
Yekau Lake	D-3A	22,924	8.0	3,384	1.2	870	0.30	38,595

GYPSUM

Gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) is calcium sulfate combined with two molecules of water. Gypsum is inexpensive to mine and process, and its calcined products have a wide range of readily controllable properties such as strength, density, and setting time. Gypsum is used chiefly in the manufacture of gypsum products for the building trade; minor amounts are used in the manufacture of portland cement, serving as a strengthening and set-retarding agent.

Some very large deposits of gypsum in Alberta are not mined at present because they are within National Parks, are far from transfer facilities, or are of poor quality. Data on some of these deposits is given in the accompanying table.

Table 19
GYPSUM DEPOSITS IN ALBERTA

Locality	Stratigraphic Unit	Thickness feet	Gypsum %	Lateral Extent	Dip	Remarks
Peace Point	Middle Devonian	4 to 80 exposed	92	14 miles	flat and undulating	Three to 50 feet of overburden; transportation by river barge to Fort McMurray and thence by rail; in National Park; per cent gypsum is an average of 17 channel samples from parts of 10 sections.
Clearwater River	Middle Devonian	30-50	84	18 miles	SW at 20 feet per mile	Occurs in depths ranging from near surface to 300 feet; per cent gypsum is average of continuous core samples from two test holes.
Head Creek	Upper Devonian Palliser	16	65-70	200 feet	35°SW	Overburden is rubbly weathering domolitic breccia and limestone; about 50 miles from railway at High River, and about 10 miles from gravelled road to Longview.
Kananaskis	Middle Devonian	11 6 10	90 92 91	?	50°SW	About 80 feet of gypsiferous rocks are exposed at a deposit 80 miles from Calgary.
Mowitch Creek	Triassic	9 1/2 9 1/2 12 7	89 95 95 82	2 miles	35° - 78°SW	Overlain by limestones, shales and sandstones; 35 miles from railway at Devona; in National Park.
Fetherstonhaugh Creek	Triassic	50	95	1180 yards	30°SW	Overlain by vuggy limestone; 40 miles from railway at Loos, B.C.; per cent gypsum from channel samples across 19 feet.

A gypsum deposit in the Clearwater River valley, east of Fort McMurray, occurs from near-surface to a depth of 300 feet. However, its average purity of 84 per cent falls short of the 90 to 95 per cent purity in ores that gypsum companies prefer to use, and for this reason must be considered marginal. A similar gypsum deposit, but probably of higher purity, is believed to occur beneath the Athabasca River valley about 60 miles north of Fort McMurray. Other Middle Devonian gypsum deposits up to 50 feet thick along the Little Buffalo, Salt and Stone rivers in northeastern Alberta and extending into adjacent parts of the Northwest Territories are even farther from markets and transfer facilities. Gypsum from Peace Point might well be transported about 600 miles by water and existing rail to arrive at the Edmonton market at competitive prices.

Plentiful supplies of gypsum are known to exist in the Smoky River headwaters area near the British Columbia border; these are now attracting considerable attention

because of proximity to the Alberta Resources Railway. Two plants are manufacturing gypsum products at Calgary. The process is that of crushing, grinding and calcining; the products manufactured are plaster and wallboard. During the past year three wall-board companies have indicated interest in locating plants in Edmonton. At present all raw gypsum is imported from British Columbia and Manitoba. Present consumption is of the order of 140,000 tons per year.

In recent years gypsum products have found a growing market in construction, especially house building, due primarily to quality advantage and ease of installation.

HELIUM

Helium is a colourless, odourless, tasteless, and chemically inert gas. It is nonpoisonous, non-flammable, less soluble in water than any other gas, and is the most difficult of all gases to liquify and solidify. Next to hydrogen, it is the lightest known substance. Helium diffuses more rapidly, conducts heat better, and transmits sound at higher velocity than any other gas except hydrogen. It conducts electricity better than any gas except neon.

Helium is used as a lifting gas in airships, as an inert gaseous shield in welding, for detecting leaks in high-pressure and high vacuum systems, in producing titanium, for low temperature research, in medicine, and as a fuel expellent in rockets and guided missiles.

The only known economic source of helium is from helium-bearing natural gas. In the United States helium is extracted from natural gases that contain from 0.46 to more than 2.0 per cent helium. Canada's only helium producing plant, at Swift Current, Saskatchewan, has an annual capacity of 36 million cubic feet.

Table 20

NATURAL GAS FIELDS OF ALBERTA WITH MORE THAN .2 PER CENT HELIUM (partial list)

Field	Formation	Helium (per cent)	Recoverable Gas at Dec. 31, 1968 (BCF)	Helium in Recoverable Gas (MMCF)	Gas Production in 1968 (MMCF)	Helium in Gas Produced in 1968 (MMCF)
Belloy	Debolt	0.30	20	60.0	0	0
Comrey	Bow Island	0.24	9	21.6	599	1.44
Eaglesham	Debolt	0.30	50	150.0	5	0.02
Etzikom	Bow Island	0.35	14	49.0	1,213	4.25
Foremost	Bow Island	0.24	20	48.0	605	1.45
Manyberries	Bow Island	0.20	6	12.0	697	1.39
Medicine Hat	Bow Island	0.22	8	17.6	28	0.06
Normandville	Mississippian	0.42	28	117.6	532	2.23
Pakowki Lake	Bow Island	0.26	9	23.4	1,077	2.80
Pendant D'Oreille	Bow Island	0.27	66	178.2	4,929	13.31
Pine Northwest	D-3A	0.24	188	451.2	9,125	21.90
Smith Coulee	Bow Island	0.26	4	10.4	1,887	4.91
Snipe Lake	Beaverhill Lake	0.39	21	148.2	630	2.46
Sturgeon Lake	D-3	0.37	16	25.9	447	1.65
Sturgeon Lake S.	D-1	0.90	2	18.0	22	0.20
	D-3	0.63	195	743.4	3,003	18.92
Winnifred	Bow Island	0.27	16	43.2	134	0.36
Worsley	D-3	0.90	128	1,152.0	13,064	117.58



A network of pipelines originating in Alberta carries oil and gas as far east as Port Credit, west to Vancouver and south to the U.S.A.

Recovery is achieved from natural gases containing about two per cent helium. Helium-bearing natural gases in Alberta are found in both gas and oil fields. The helium content in recoverable gases is generally much higher for gas fields than for oil fields. Data on gases containing more than 0.2 per cent helium are given above. At present the helium is lost to the atmosphere when these gases are burned as fuel.

IRON ORE

Most iron ore is made into pig iron and used as a raw material in crude steel production.

Various showings of iron-rich rocks have been reported from different parts of Alberta in the past 60 years, but only two of these deposits have proven to be of sufficient size to warrant detailed investigation.

Low-grade titaniferous magnetite deposits of sedimentary origin are present at widely scattered localities in the foothills, near the Crowsnest Pass. The deposits are thin lenses of banded magnetite-rich sandstones in the basal strata of the Late Cretaceous Belly River Formation, and have been complexly folded and faulted. The richest deposits grade between 25 and 30 per cent iron, with four to five per cent TiO_2 , but are unsuitable for conventional beneficiation and smelting techniques because of their high

chlorite and titanium content and fine grain sizes. Reserves are estimated at less than two million tons near Burmis in the Crowsnest Pass, and less than six million tons near Dungarvan Creek south of Pincher Creek.

Large deposits of low-grade sedimentary iron ore are present in the Peace River District. The deposits consist of thin but widespread oolitic sandstone bodies interbedded among flat-lying shales and sandstones of Late Cretaceous age. The iron-rich sandstones are comprised mainly of limonitic oolites in a fine-grained groundmass of siderite, chamosite, and clay, and grade between 35 and 40 per cent iron, with relatively high silica and low lime contents. The largest deposits outcrop north of the Peace River along the flanks of the Clear Hills, on Swift Creek and near Worsley. Estimates of reserves range between 250 million and one billion tons.

Ferruginous sandstone deposits equivalent in age to those in the Clear Hills are also present south of the Peace River, between Spirit River and Gordondale, but no estimates of grade or reserves are available.

LIGHTWEIGHT AGGREGATE

Lightweight aggregates are natural or manufactured products which may be used to make concrete with densities one-third or less than those made with sand, gravel and crushed rock. Natural materials include pumicite, tuffs, breccia and diatomite. Manufactured materials include expanded clay, shale, perlite, and vermiculite. Lightweight aggregate is used in the fabrication of insulating, structural and oil well concrete, acoustical blocks, stucco and masonry units. Lightweight aggregate, when used in the manufacture of concrete, develops equal or greater strength than ordinary concrete, reduces the need for structural steel, reduces maintenance costs, makes concrete up to 60 per cent lighter in weight and is sound and fireproof.

The various lightweight aggregates are used mainly in commercial and institutional construction.

Although several deposits of pumicite are present in Alberta, none are as yet used for lightweight aggregate; deposits are too small, too far from transportation facilities, too far from markets or unsuitable.

Lightweight aggregate is being made from imported vermiculite and perlite in plants at Calgary and Edmonton.

Table 21
PUMICITE DEPOSITS IN ALBERTA

Locality	Thickness (feet)	Remarks
Irvine	5-10	Varies from pure pumicite to bentonitic; 100 feet above base of Bearpaw Formation on north and east sides of Cypress Hills extensive outcrops one mile south of Irvine.
Marten Mountain	1	Poorly exposed; at west end of mountain at east end of Lesser Slave Lake.
Calgary	1	In alluvial deposits a short distance above bedrock, just downstream from Glenmore Dam.
Willow Creek SE 36-13-2-5	1	Formerly mined; cream-colored to black; under two feet of overburden; 80 per cent passes a 200-mesh screen; recently reported thicknesses are considerably greater than one foot.
Asplund NE 27-69-22-5	1 1/2	Indurated, partly altered to bentonite.
20 miles north of Rocky Mountain House SE 26-42-8-5	unknown	Exposed on both sides of North Saskatchewan River.

Clays and shales suitable for the manufacture of lightweight aggregate are widespread in Alberta: the best are obtainable from Upper Cretaceous Belly River and Bearpaw Formations. Most outcrops are, however, too far from markets for large-

scale quarrying at present. Furthermore, numerous sandstone beds in the Belly River Formation make quarrying difficult. Local clays and shales are expanded into light-weight aggregate in rotary kilns in Edmonton and Calgary.

LIMESTONE AND LIME

Limestone is carbonate rock. There are two basic types: high-calcium and high-magnesium. High-calcium limestones are preferred for most purposes. Limestone is used in the production of lime and cement, in road metal; as a filler in asphalt, paint and rubber; and as a flux in the smelting of ores.

Limestone is exposed in the Palaeozoic strata of the Rocky Mountains and along the margin of the Precambrian Shield. Data on some of the high-calcium beds near railways are shown in the accompanying table.

Limestone is a commodity of low unit value. Existence of transfer facilities and the distance from markets are important factors determining the feasibility of developing a deposit. Other considerations include chemical composition, texture, hardness and colour of the rock, as well as the thickness and extent of the beds.

Limestone is being quarried at Cardston, Cadomin, Cascade, Canmore, Exshaw, Kananaskis and Seebe.

Table 22

HIGH-CALCIUM LIMESTONES IN ALBERTA

Locality	Thickness (feet)	CaCO ₃ (per cent)	MgCO ₃ (per cent)	Remarks
Blairmore, at base of Turtle Mountain	24	98.8	1.2	Strikes N 26° W, dips 65° SW, quarried for lime plant before 1909 and for a cement plant from 1909 to 1915; 24-foot layer separated from overlying 40-foot layers by 18 feet of cherty magnesian limestone.
	40	96.5	2.8	
	40	88.9	10.2	
Crowsnest Pass	150	96.3	2.0	East of cave opposite Crowsnest Lake; strikes N 55° W, dips 32° SW. Opposite east end of Island Lake; 100-foot layer separated from 150-foot layer by limestone conglomerate or breccia.
	150	97.0	2.3	
	100	98.2	1.6	
Heart Mountain (south of Kananaskis)	250 -	94.9	2.7	In lower Rundle Formation; strikes N 30° W, dips 35° to 40° SW; minimum reserves estimated at 10 million tons; analyses are weighted averages.
	300			
Exshaw	22	97.3		In section east of Canada Cement Plant; strikes N 50° W, dips 30° SW; these layers are near top of measured section and are separated by 27 feet of section covered by overburden.
	92	96.2		
Nordegg	50	95 - 98	0.6 - 4.2	Layer about 100 feet above base of Rundle Formation along railway within one mile of Nordegg; dips 10° to 14° SW; reserves estimated at 8 million tons; two other nearby layers are thinner but have similar compositions; one was formerly quarried for railroad ballast.
Brule	200	91.6	6.3	Three miles SW of Brule at Ogre Canyon.
Fort McMurray	unknown	95.2	1.1	Grab sample from north bank Clearwater River at its confluence with Athabasca River;
	unknown	93.4	1.5	Grab sample from north bank Clearwater River, 23rd baseline, R. 5, 6, W4; both samples from Beaverhill Lake Formation.
Bruderheim	105	99	1	In Devonian Leduc Formation; average of 30 samples taken between 3,144 feet and 3,249 feet in a well.

Lime or quicklime is limestone calcined at high temperature. A secondary form is hydrated lime, made commercially by adding water. The manufacture of lime involves three principal processes: crushing, calcination and hydration. The purity of the product depends on the quality of the limestone and the method of processing.

Lime is relatively inexpensive and is widely employed in a number of industrial processes. Building use is as an ingredient in plaster, mortar, brick and stucco. Metallurgical uses include the control of acidity and alkalinity, neutralization of waste sludges and liquors, and in the fluxing of steel. Chemical uses of lime are as an acid-neutralizing agent, a flocculant, a flux (purifier), a causticizing agent, a lubricant, a bonding agent, a solvent, and for hydrolization and absorption. Lime is also used in the manufacture of fertilizers, in highway construction to stabilize sub-bases; in tanning, sugar refining, treating water, making insecticides and fungicides; in the manufacture of glass; and in dissolving fluids for pulp.

Lime plants at Raymond, Picture Butte, Taber, Kananaskis, and Crowsnest produce high-calcium lime; those at Kananaskis and Crowsnest produce the hydrated varieties as well. In 1968 over 71,000 tons of lime, valued at \$1.3 million were produced.

PHOSPHATE

Phosphate rock is a natural rock containing one or more phosphatic minerals, usually calcium phosphate. Phosphate is used chiefly in the manufacture of fertilizer. There are at present four plants in Alberta converting the natural rock into phosphoric acid which is combined with ammonia to make various ammonium phosphate fertilizers.

Phosphatic minerals are used in stock and poultry feed, food processing, metal treatment, pharmaceuticals, sugar refining, ceramics, smoke screens, in the manufacture of soap and detergents, chemical reagents and incendiary bombs.

Phosphate deposits are mined extensively in Florida and in the states of Idaho, Montana, Wyoming and Utah. The latter deposits extend northward into the Canadian Rockies. Deposits of phosphate rock are widespread from south of the Crowsnest Pass to north of Jasper. The phosphate, some as nodules or oolites, is present in beds and combined with shale, limestone, chert, and conglomerate, ranging from 0.1 feet to two feet thick. Although some of these beds appear to thicken and become richer toward the west, none of those known are thick enough, continuous enough, or rich enough to compete with the phosphate beds in the Phosphoria Formation in the United States, where the richest beds range from three to more than nine feet thick. The phosphate rock being used in Alberta is being imported from Utah, southeastern Idaho and Florida; 568,000 tons were brought into Alberta in 1968.

Given a continued and rapid growth in the market for phosphate fertilizers, there is always the possibility that further investigation may uncover deposits of economic value. This is especially true since phosphate is sometimes difficult to detect in the field.

POTASH

The term "potash" applies to soluble rock materials containing potassium in extractable amounts. About 95 per cent of the potash produced is used as fertilizer. Potash, phosphorus and nitrogen are the basic ingredients in mixed chemical fertilizer.

Potash is found in three or more fairly continuous and consistent layers in the upper part of the vast platter-shaped Prairie Evaporites Formation, which underlies southern Saskatchewan and adjacent parts of Manitoba and Alberta.

Most commercial potash beds in this formation are confined to Saskatchewan, grading into salt beds towards the Alberta side of the basin. Some areas south and west of Lloydminster are uneconomic in terms of grade, thickness and depth.

SALT

Common salt is crystallized sodium chloride. Salt is found either in solids as rock salt or in solutions as brines. Common salt has a wide range of uses; in the chemical industry for the manufacture of sodium hydroxide, chlorine and hydrochloric acid; in the tanning industry; for salting and curing meat and fish; in cattle and stock feed; in textile dyeing; in water softeners; in refrigeration; for ice and dust control on roads; in the pulp and paper industry for the production of the required large amounts of chlorine and caustic soda; and a small part (approximately three per cent) for domestic purposes.

Deposits of common salt underlie a considerable area of eastern Alberta. The salt beds dip southwesterly from 600 to 800 feet below the surface at Fort McMurray and 5,000 to 6,000 feet below the surface near Edmonton. The thickest salt deposits are in the Middle Devonian Elk Point Group; thinner deposits are in the Upper Devonian Stettler Formation near Stettler, and east of Drumheller. The salt beds are more than 1,300 feet thick about 30 miles west of Cold Lake and become thinner in all directions, being 700 feet thick at Lindbergh, between 400 to 500 feet at Duvernay, up to 200 feet at Fort McMurray and 165 feet just east of Edmonton. Individual salt beds range up to about 440 feet thick and are separated from each other by layers of limestone, dolomite, anhydrite, and gypsum. Thus, salt is readily available in Alberta for all foreseeable needs.

Salt plants at Duvernay and Lindbergh produced 128,000 tons of salt valued at \$2.0 million in 1968. At Lindbergh salt for domestic and industrial consumption is obtained from salt beds 3,600 feet below the surface. At Duvernay, brine from salt beds 3,600 feet below the surface is used to make caustic soda, chlorine, and hydrochloric acid.

SAND AND GRAVEL

Sand and gravel are unconsolidated materials derived from the natural disintegration and abrasion of rocks. They normally appear together but in a wide variety of sizes and types. Major uses are as aggregate in concrete, mortar, plaster, and in asphalt paving material and road surfacing. For general concrete construction or asphalt purposes the sand should be a fairly coarse product; for sub-basing roads an even

coarser grade is used; for plaster and mortar a fine grade is required; a finer sand is used sometimes to cover fresh asphalt and oil sprayed roads, presumably because such sand has more surface to absorb the oil. Pea gravel separated from other sizes by screening is used on roofs; and crushed chips are used for winter traction at airports.

Economic deposits of sand and gravel are common in parts of the plains of Alberta, but are most plentiful in the foothills and mountains.

Geologically, sand and gravel deposits on the plains of Alberta can be divided into three groups according to age: preglacial, glacial, and recent. Preglacial gravel deposits are composed mainly of rounded quartzite pebbles derived from the Rocky Mountains. They cap bedrock topographic highs such as the Cypress, Hand, Swan, and Clear Hills, and some other small bedrock knobs, and form deposits in preglacial bedrock channels. Generally, these sand and gravel deposits are of a good grade but comprise only a small fraction of the total production because of their small number and the depth of overburden. Edmonton is supplied largely by this type of gravel.

The last continental glacier, which covered almost all of Canada and large parts of the United States, disappeared from Alberta about 10,000 years ago. The meltwaters of the wasting glacier were loaded with debris from the bedrocks over which the glacier passed. This debris consisted mostly of Cretaceous clays and sands, with only small amounts of gravelly materials carried from the Canadian Shield several hundred miles to the north. Economic gravel deposits were, therefore, left only where very large amounts of glacial meltwater washed out the fine material and concentrated the gravel along the limited number of large glacial drainage ways. The Canadian National Railways' pit at Kinsella, the pit at Little Fish Lake near Drumheller, and those supplying Calgary are in glacial gravels.

Recent sands and gravels are found along present rivers, such as the North Saskatchewan, Red Deer, and Bow. Gravel from these deposits, although poor in quality, is used in the absence of better materials.

Alberta production of sand and gravel in 1968 was 13.0 million tons valued at \$11.7 million.

SILICA SAND

Silica or quartz sand implies a sand whose chemical composition is primarily quartz, with few impurities. Most commercial sand is high in silica and low in iron.

Silica sand is used in the manufacture of glass and glass fibre, in foundries for moulding purposes, in some asphalt roofing products, and in high quality sand blasting. Special grades of silica sand are also used by oil servicing companies in the hydraulic fracturing of oil formations. Currently in Alberta, the glass manufacturing industry is the major user, and its requirements are exacting.

In 1968 over 88,700 tons of silica sand were used in manufacturing industries and oil well fracturing operations. Sand used in oil well fracturing is imported from



Coal mining at Canmore along with other areas has been stimulated by huge sales to Japan, tapping Alberta's estimated 48 billion tons of reserve.

Brady, Texas, Sand used for manufacturing glass is shipped into the province from Valley, Washington and Selkirk, Manitoba.

A number of deposits of high grade silica sand have been discovered in Alberta. However, very few of the deposits are ideally situated with respect to transportation and often the distance to markets makes their development uneconomic at present. Deposits in the Peace River area lie in the upper 40 to 60 feet of the Peace River Formation. They are clean, fine-to-coarse grained quartz, of good purity and capable of being upgraded to glass-sand specifications. The Pipestone River deposit, 22 miles north of the Lake Louise Station, lies within Banff National Park and cannot at present be commercially exploited.

The sand left after extracting oil from the Athabasca Oil Sands consists essentially of quartz with mica as the chief impurity and should be a clean, high quality sand of commercial grade, providing that the thin film of oil left on the sand can be removed. There are probably areas along the Athabasca River where sand of larger grain size and of better quality for glass manufacturing exists.

In the past, Alberta deposits have not received much attention because of high beneficiation costs, restrictions on mining in parks, and because top-quality, low cost sand has been readily available from suppliers in the United States. With rising freight costs consumers are beginning to look at local deposits.

SODIUM SULPHATE

Sodium sulphate comes on the market in three forms: salt cake, the relatively crude form containing up to three per cent impurities; anhydrous sodium sulphate, a refined form containing less than 0.3 per cent impurities; and Glauber's salt, the decahydrate containing 55.9 per cent water of crystallization.

Natural sodium sulphate collects as crystal beds and covering brines in closed drainage basins in western Canada. Competing with natural sodium sulphate is by-product sodium sulphate from a number of industrial operations.

Sodium sulphate is used chiefly in the kraft pulp industry. It is used to a lesser extent in the manufacture of glass, synthetic detergents, various sodium salts in the chemical industry, pharmaceuticals, fertilizers, in dyeing, tanning, and uranium processing.

Presently, natural sodium sulphate is being produced in Saskatchewan, from alkali lakes similar to those in Alberta. Productive capacity is 800,000 tons annually.

In Alberta the Metiskow deposit, which came into production in 1969, contains an estimated 1.8 million tons of sodium sulphate.

SULPHUR

Sulphur is a pale yellow non-metallic element occurring in crystalline and amorphous modifications.

Table 23

SODIUM SULPHATE DEPOSITS IN ALBERTA

Deposit	Area (acres)	Depth of brine (feet)	Na ₂ SO ₄ in brine (per cent)
Metiskow	640	1	10
Kinsella	153	4-6	4
Kinsella	96	2-3	11
Kinsella	200	4-5	5
Cairns	500	1-2	9
Cairns	350	1-2	12

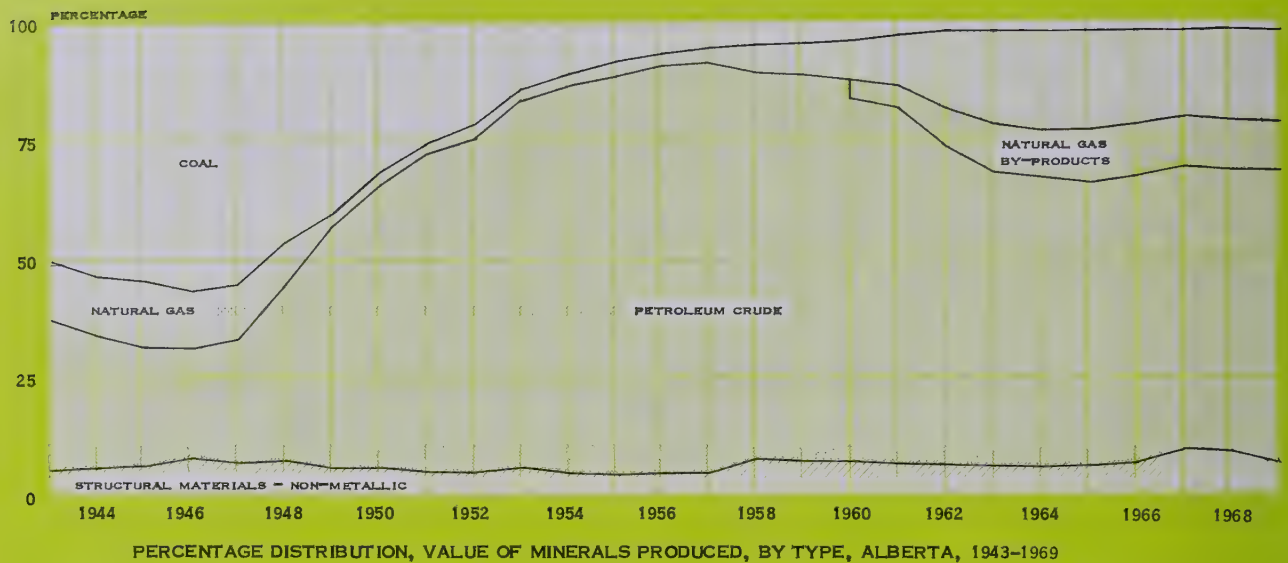
Sulphur can be derived from iron pyrites and other sulphide ores as a by-product of smelter gases, from natural gas, and from bedded elemental sulphur deposits such as those along the Gulf Coast.

Sulphur is rather plentiful in the earth's crust, however, only under special circumstances can it be commercially produced. Alberta elemental sulphur is produced from hydrogen sulphide which is removed in the process of making sour natural gas suitable for marketing. As a co-product of natural gas extraction, sulphur is relatively inexpensive f. o. b., but producers must consider substantial transportation costs.

Alberta sour gas fields, and annual production figures of each, are as shown. Production of sulphur from these fields in 1968 was valued at \$78.4 million — 96.4 per cent of the Canadian total.

Table 24
SULPHUR PRODUCTION IN ALBERTA, 1962 - 1968
(long tons)

Gas Field and Operator	1962	1963	1964	1965	1966	1967	1968
Athabasca Tar Sands Great Canadian Oil Sands Ltd.	-	-	-	-	-	-	23,486
Bigstone Pan American Petroleum Corporation	-	-	-	-	-	-	64,644
Caroline Hudson's Bay Oil and Gas Co. Ltd.	-	-	-	-	-	-	1,351
Carstairs Home Oil Co. Ltd.	5,663	7,694	9,512	9,470	9,187	7,359	11,323
Crossfield Petrogas Processing Ltd.	170,216	231,889	257,524	242,627	229,213	434,026	600,355
Crossfield East Pan American Petroleum Corporation	-	-	-	-	-	-	406,869
Edson Hudson's Bay Oil and Gas Co. Ltd.	-	-	-	2,089	31,575	36,765	55,360
Harmattan Elkton Canadian Superior Oil Ltd. (Leduc)	-	-	-	-	27,033	208,144	240,258
Homeglen Rimbey British American Oil Co. Ltd.	63,952	71,621	83,148	87,655	85,934	92,380	94,662
Innisfail Shell Canada Ltd.	33,704	32,302	32,351	21,718	21,971	22,425	20,563
Jumping Pound Shell Canada Ltd.	28,325	29,225	31,544	32,715	33,797	34,906	55,153
Kaybob South Hudson's Bay Oil and Gas Co. Ltd.	-	-	-	-	-	-	4,070
Lone Pine Creek Hudson's Bay Oil and Gas Co. Ltd.	-	-	-	-	-	12,416	23,949
Minnehik-Buck Lake Canadian Delhi Oil Ltd.	-	-	-	-	-	4,652	5,065
Nevis British American Oil Co. Ltd.	18,520	20,709	21,905	21,821	20,291	29,942	42,096
Chevron Standard Ltd.	37,279	42,929	45,430	46,453	43,622	39,937	44,305
Okotoks Texas Gulf Sulphur Co.	119,937	123,925	131,052	139,833	134,215	142,314	130,410
Olds Amerada Petroleum Corporation	-	-	3,540	42,028	54,487	59,234	55,502
Pincher Creek British American Oil Co. Ltd.	173,152	170,079	125,139	99,001	82,076	72,851	86,955
Rainbow Banff Oil Ltd.	-	-	-	-	-	-	5,256
Redwater Imperial Oil Ltd.	2,240	2,086	1,833	1,633	1,842	1,953	2,031
Savanna Creek Jefferson Lake Petrochemicals of Canada Ltd.	28,309	89,748	36,133	26,397	25,822	29,825	26,620
Turner Valley Royalite Oil Co. Ltd.	7,837	8,402	7,831	4,892	3,640	5,854	5,714
Waterton Shell Canada Ltd.	134,300	206,498	378,040	369,576	402,720	371,078	504,712
Wildcat Hills Canadian Fina Oil Ltd.	21,696	21,093	22,669	26,673	26,469	38,705	42,474
Wimborne Mobil Oil Canada Ltd.	-	-	-	54,747	82,609	78,420	69,005
Windfall Texas Gulf Sulphur Co.	127,221	219,467	226,587	309,100	359,717	392,978	367,400
TOTAL	972,351	1,227,667	1,414,238	1,538,428	1,676,220	2,116,164	2,989,588



The continued heavy demand for sulphur, estimated to be increasing six per cent annually, at attractive prices due to tightening world supply and depletion of stock-piles, has acted as a strong stimulus for the expansion of existing facilities and the construction of new plants in Alberta.

Table 25

MINERAL PRODUCTION, ALBERTA, 1941 - 1968

FUEL		1941	1946	1951	1956	1961	1966	1968	1969+
Coal	Tons	6,969,962	8,826,239	7,659,329	4,328,787	2,027,826	3,467,254	3,913,801	4,422,036
	\$	19,382,471	33,339,579	40,981,581	23,274,012	10,472,978	11,947,258	12,100,484	13,895,992
Natural Gas	M.Cu.Ft.	30,905,440	40,097,096	69,876,831	146,133,893	500,843,900	1,090,691,124	1,363,394,712	1,609,325,945
	\$	5,175,364	7,184,006	3,493,842	10,960,042	48,882,365	146,215,000	185,356,207	218,791,048
Natural Gas By-Products	Bbls.	-	-	-	-	-	-	-	-
	\$	-	-	-	-	23,059,867	94,116,979	119,612,273	129,845,296
Petroleum, Crude	Bbls.	9,918,577	7,137,921	45,915,384	143,909,641	157,811,712	203,339,433	257,186,578	284,241,338
	\$	13,985,906	14,347,933	113,870,152	353,629,158	355,530,845	524,005,719	660,485,368	731,121,266
STRUCTURAL MATERIALS									
Clay Products	\$	952,144	1,808,971	1,787,731	3,038,544	3,517,473	3,422,614	4,424,543	3,839,766
Cement	Bbls.	492,515	809,721	1,649,909	3,440,931	3,873,794	4,699,200	4,757,646	4,894,537
	\$	985,030	1,635,222	3,898,043	8,258,016	12,420,025	15,685,259	18,072,409	19,138,991
Lime	Tons	17,950	23,785	30,670	41,309	47,506	72,875	76,984	85,782
	\$	151,296	204,926	395,452	624,060	838,365	1,316,557	1,414,679	1,736,220
*Sand and Gravel	Tons	956,484	1,812,468	4,289,021	10,522,441	12,591,944	12,886,213	13,600,098	13,700,000
	\$	433,504	1,060,703	3,194,446	8,877,806	10,927,057	10,298,933	10,739,614	10,800,000
Stone	Tons	7,942	13,417	13,310	66,820	96,753	144,433	220,523	225,300
	\$	24,303	55,286	46,820	343,166	337,150	544,737	695,872	697,200
METALS									
Gold	Fine oz.	215	110	97	119	171	182	146	100
	\$	8,277	4,042	3,574	4,100	6,064	6,863	5,505	3,770
Silver	Fine oz.	21	12	9	14	17	17	30	19
	\$	8	10	8	12	16	23		
									7,993
									201,506
NON-METALLICS									
Peat Moss	Tons	421	-	-	-	-	6,515	-	-
	\$	5,055	-	-	-	-	121,093	-	-
Quartz	Tons	-	-	-	-	-	-	120,381	125,469
	\$	-	-	-	-	-	-	1,776,359	2,462,092
Salt	Tons	16,617	31,769	19,718	46,654	83,880	122,814	2,488,688	2,894,200
	\$	260,995	441,835	472,562	1,162,982	1,355,074	1,772,947	76,864,200	60,716,042
Sulphur, Elemental	Tons	-	-	-	-	339,080	1,933,920		
	\$	-	-	-	-	6,133,261	37,224,660	1,091,749,049	1,193,279,802
TOTAL VALUE	\$	41,364,353	60,082,513	168,144,211	411,171,898	473,480,540	846,678,642	973,326,938	1,080,420,896

* Sand and gravel are not legally minerals in Alberta but are part of the surface in accordance with the Sand and Gravel Act, 1951. + Preliminary

CANADA'S NORTH

Canada's northland is a region -- vast, rich in mineral resources, timber, and potential power sites. Comprising both the Yukon and the Northwest Territories, about 1.5 million square miles or nearly 40 per cent of the area of Canada, it contains less than half of one per cent of the Canadian population.

The economies of the Yukon and Northwest Territories are based on their minerals. Historically, gold and silver accounted for about 80 per cent of the value of minerals produced. Production patterns have altered dramatically in the last several years, with the opening of the Pine Point lead-zinc mines. Total value of mineral production in the territories was \$146 million in 1968; of this gold and silver accounted for 19 per cent and lead-zinc for 66 per cent.

The developments at Pine Point have greatly stimulated prospecting and exploration activity throughout the Northwest Territories. In the Yukon Territory asbestos deposits at Clinton Creek, copper deposits at Whitehorse and lead-zinc deposits 130 miles northeast of Whitehorse have recently come into production.

Most of the favourable mineral-bearing lands of the Northwest Territories are unprospected but there is every reason to believe that they will be as rich in mineral wealth as those of similar geological age in the southern part of the Canadian Shield. However, economic factors will regulate the rate of the development of resources. As long as cheaper and more accessible minerals are available elsewhere, the capital invested in northern mining is likely to remain relatively modest.

Productive forested area in the Yukon Territory and the Mackenzie River valley totals about 75,000 square miles, and forestry operations form a small but important part of the economies of both regions.

The potential hydro-power resources, particularly those of the Yukon, are considerable. However, hydro-electric development is not yet extensive.

Local production of agricultural products has been severely limited by lack of soil and also by climatic conditions. At present, small-scale agricultural operations, to serve the immediate needs of local markets, are carried on in the more favourable areas of the Yukon and along the Mackenzie River. There is little prospect of thriving agricultural-based communities.

Through the development and utilization of various modes of transportation Alberta is closely linked with the Yukon and Mackenzie River valley developments. Air, road, rail and water routes funnel out of Alberta. Telecommunication networks parallel transportation routes: the recently installed microwave communication system, which has become such a boon, links the north with all points on the Continent.

The Alaska Highway, passing through northeastern British Columbia and the Yukon, is linked transcontinentally through the Alberta road network. The Mackenzie Highway from Peace River -- Grimshaw to Hay River was built to provide bulk freight access to northern settlements. It is now supplemented by the recently completed Great Slave Lake Railway, built to carry Pine Point ores to the smelters in the south. On the east the Northern Alberta Railway links Edmonton -- Fort McMurray with the water transportation system extending to the Arctic Ocean.

Edmonton is the major supply centre for the mining communities of the northern areas. Since the discovery of oil at Prudhoe Bay in Alaska drilling activity has been further stimulated in Canada's north. Almost three times as many wells have

been completed in the north in 1969 as compared with 1968. The building of both oil and gas pipelines from the north through Alberta and into the United States has been proposed. With the increased demand for natural gas in the United States the gas pipeline could become a reality within the next few years. This further development will benefit Alberta as the federal government foresees a ten-fold increase in freight through Canada to the north over the next five years.

As a move to speed development, the federal government, in 1967, selected Yellowknife as the capital of the Northwest Territories. Moving the seat of government from Ottawa is an important step toward self-government for the region.

New methods of prospecting for minerals, coupled with continuing technological improvements in transportation, so vital to development, continue to brighten the future of Canada's northland. Pipelining, large-scale air transport, and such naval developments as submarine transports, all hasten the day when the mineral wealth will be tapped, developing this region and strengthening its economy.

Table 26
MINERAL PRODUCTION IN THE NORTHWEST TERRITORIES FOR SPECIFIED YEARS
1947 - 1968

		1947	1951	1955	1959	1963	1966	1967	1968
Gold	Fine oz.	62,517	212,211	321,321	405,922	400,885	424,029	380,304	347,012
	\$	2,188,095	7,819,975	11,092,001	13,626,802	15,133,409	15,990,133	14,356,476	13,085,822
Silver	Fine oz.	45,355	64,228	58,477	70,560	81,206	1,662,192	1,980,228	3,855,967
	\$	32,655	60,728	51,565	61,937	112,389	2,325,407	3,429,755	8,938,132
Uranium	Lb.	-	-	-	919,333	-	-	-	-
	\$	-	-	-	8,155,729	-	-	-	-
Copper	Lb.	-	1,934	-	986,682	32,638	1,496,805	1,131,126	2,097,800
	\$	-	536	-	292,157	10,281	672,065	538,077	946,108
Lead	Lb.	-	-	-	-	-	210,659,720	254,753,820	260,000,000
	\$	-	-	-	-	-	31,472,562	35,665,535	35,152,000
Nickel	Lb.	-	-	-	3,841,770	-	-	-	-
	\$	-	-	-	2,689,239	-	-	-	-
Petroleum	Bbls.	227,474	227,449	404,219	430,319	631,229	752,585	677,937	766,700
	\$	500,238	399,887	1,185,780	1,025,914	633,754	842,895	779,628	881,700
Natural Gas	M. Cu. Ft.	-	19,333	18,670	67,189	51,478	46,238	40,589	37,500
	\$	-	7,621	6,213	22,718	21,330	19,400	17,137	15,850
Zinc	Lb.	-	-	-	-	-	378,333,400	419,964,800	430,000,000
	\$	-	-	-	-	-	57,128,344	60,852,900	60,630,000
Cadmium	Lb.	-	-	-	-	-	1,073,400	911,400	900,000
	\$	-	-	-	-	-	2,769,372	2,551,920	2,565,000
Other	\$	-	-	13,262,262*	-	-	-	-	-
TOTAL VALUE	\$	2,720,988	8,288,747	25,597,821	25,874,496	15,911,163	111,220,178	118,191,428	122,214,612

* Includes Pitchblendes at \$13,232,079

Table 27
MINERAL PRODUCTION IN THE YUKON TERRITORY FOR SPECIFIED YEARS
1947 - 1968

		1947	1951	1955	1959	1963	1966	1967	1968
Cadmium	Lb.	-	66,452	211,808	141,750	135,885	118,735	94,999	50,750
	\$	-	178,091	360,074	181,440	326,124	306,336	265,997	144,638
Coal	Tons	-	3,696	7,040	3,879	8,231	5,670	1,912	-
	\$	-	60,597	81,806	58,200	123,675	46,390	15,791	-
Copper	Lb.	-	-	-	-	-	-	7,167,919	11,965,800
	\$	-	-	-	-	-	-	3,409,779	5,755,550
Gold	Fine oz.	47,745	77,504	72,201	66,960	55,211	43,466	17,900	24,957
	\$	1,671,075	2,856,022	2,492,379	2,247,847	2,084,215	1,639,103	675,725	941,128
Lead	Lb.	1,145,256	12,533,071	26,248,786	21,592,456	16,978,607	15,975,125	15,299,709	7,034,890
	\$	156,556	2,306,085	3,774,575	2,290,960	1,867,647	2,386,684	2,141,959	951,117
Silver	Fine oz.	372,051	3,442,788	5,712,219	7,054,632	6,106,037	4,194,580	3,869,374	2,061,534
	\$	267,877	3,255,156	5,037,035	6,192,556	8,450,755	5,868,217	6,701,756	4,778,635
Zinc	Lb.	-	5,678,999	21,823,307	13,246,532	11,850,706	11,450,510	9,476,545	4,860,000
	\$	-	1,130,121	2,978,881	1,621,375	1,514,520	1,729,027	1,373,151	685,260
Other	\$	-	7,098	-	-	-	-	406,371	10,240,000
TOTAL VALUE	\$	2,095,508	9,793,170	14,724,750	12,592,378	14,366,936	11,975,757	14,990,529	23,496,328

ENERGY RESOURCES

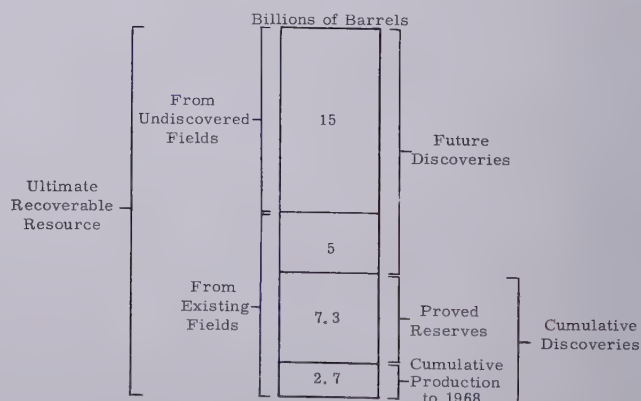
Various competent authorities prepare varying estimates of the fossil fuel energy resources of Alberta. Only time and experience will confirm which assessment is the most nearly accurate. Accordingly there will be found to be differences in texts and tables dealing with the estimated energy resources of the province. Ed.

Western Canada competes in an international market for exports of fossil fuels. The steadily increasing pace of demand for these energy sources has caused intensified exploration activities not only in Alberta (where the bulk of Canada's resources of coal, oil and gas exist) but also in the sedimentary basins extending north of Alberta to the Arctic islands. A network of pipeline and rail facilities is being further developed to make available to continental and world markets Alberta's fossil fuels in raw and semi-processed form.

While coal is the most abundant of the world's energy resources, oil is more easily transported and utilized in the conventional energy markets. Thus in Alberta, as elsewhere, exploration for, and production of, crude and synthetic oils has steadily increased. A consequence of these activities has been a clearer assessment of the magnitude of Alberta's wealth of all fuel resources. The ultimate recoverable fossil fuel resources of Alberta are estimated to comprise the equivalent of 3,000,000,000,000,000 British Thermal Units. Crude oil represents less than six per cent of this total; of the crude oil less than 10 per cent had been produced by 1969, as shown in the accompanying graph. It is estimated that by 1982 cumulative production will have totalled 10 billion barrels.

An equivalent amount of ultimately recoverable resources of gas and gas products will probably be found as time goes on. Until recently, gas and gas products have been produced as a by-product of crude oil, with the proportion of proved reserves remaining much higher for gas. Alberta has accounted for about 80 per cent of the cumulative discoveries of oil and gas in Canada.

ESTIMATED ULTIMATE RESOURCE OF CRUDE OIL
IN ALBERTA
(exclusive of the Athabasca Oil Sands)



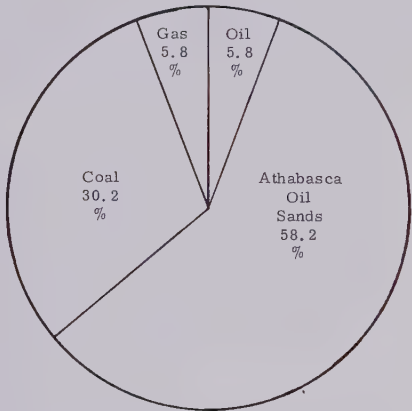
It is estimated that 700 billion barrels of oil exist in the Athabasca oil sands of Alberta, and that around 300 billion barrels will eventually be recovered. Production from the sands began in 1968.

Up to 1968 only 300 million tons of coal had been produced, a small fraction of the 48 billion tons of mineable coal. One half of the known coal reserves of Canada are in Alberta.

Ultimate utilization of Alberta's resources of fossil fuels will be a function of world demand. While these resources are exhaustible, it appears that production will grow and continue at even greater rates than at present, at least for the next 30 years.

During 1968, the contribution of the non-exhaustible resource of hydro power to the energy market represented .1 per cent of the Alberta total from all sources. The contribution by production from the oil sands increased to over one per cent, coal contributed about three per cent, and the balance was from conventional oil and gas production.

PROPORTIONATE ESTIMATED RECOVERABLE
FOSSIL FUELS RESOURCES OF ALBERTA
(in British Thermal Units)



Machinery manufacturing in Alberta adds up to about \$17,000,000 each year.

ELECTRIC POWER

In terms of energy resources, Alberta, with its oil, natural gas, oil sands and tremendous deposits of mineable coal, is the richest province in Canada. A prime requirement of any potential industrial area is a cheap and plentiful supply of electric power. Alberta with its super-abundance of several forms of fossil fuels plus numerous hydro electric sites is in a most fortunate position. Proven oil and gas reserves of the province are large enough to serve all of Canada's immediate needs, with a substantial surplus for export. Its coal fields contain some 50 billion tons of mineable coal — more than one-half of the Canadian total.

Surveys of the province's rivers indicate that, in addition to approximately 680,000 KW net capability of hydro power developed, they could yield well over two million additional KW if economic conditions and demand warranted full utilization. Sites on the Saskatchewan, Peace and Smoky rivers totalling over 2,000,000 KW potential have been investigated and can be developed if they become economically feasible. With these potential hydro sites and abundant fuel resources that can be converted into very low cost electric power, Alberta can offer cheap and plentiful power to the new businesses and industries that are bound to be established in the province.

By the end of 1968, Alberta's power plants made it the fourth largest producer of power in Canada. Its steam, hydro and internal combustion plants had a total net capability of 1,895,000 KW and generated 7.1 billion KWH of electricity for 459,000 customers including about 63,000 farmers actually using power. While these farm customers use only a small percentage of the total electric power consumption in the province, its availability is an essential factor in improving efficiency in agricultural production. An interconnected system of power plants and transmission lines joins all the major points in the

Table 28

NET CAPABILITY, NET PEAK LOAD AND NET GENERATION
BY TYPE OF POWER SOURCE, ALBERTA, 1968

Name of Company	Net Capability K. W.	Net Peak Load K. W.	Net Generation M. W. H.
Hydro			
Calgary Power Ltd.	680,000	588,200	1,059,331
Northland Utilities Ltd.	1,400	900	3,879
Total Hydro	681,400		1,063,210
Steam			
Calgary Power Ltd.	569,000	579,500	3,334,050
Canadian Utilities Ltd.	90,500	65,000	470,291
City of Edmonton	392,000*	352,000	1,547,374 (1)
City of Lethbridge	30,700*	31,000	150,607 (2)
City of Medicine Hat	40,500	40,000	207,728 (3)
Total Steam	1,122,700		5,710,050
Internal Combustion			
Calgary Power Ltd.	-	-	81
Canadian Utilities Ltd. and Northland Utilities Ltd.	90,565*	59,026	293,110
Total Internal Combustion	90,565		293,191
Grand Total	1,894,665		7,066,451

* Includes gas turbines

(1) Includes 125,728,500 K. W. H. supplied to system

(2) Includes 9,274,200 K. W. H. supplied to system

(3) Includes 57,830,700 K. W. H. supplied to system

province, from Medicine Hat in the south east to beyond the Rainbow Lake oilfield in the northwest which is some 700 miles north of the United States border. Isolated plants serve Fort McMurray, Jasper and a few rather remote spots in the northern half of the province.

In the past, most of the thermal generation in Alberta has been from plants using natural gas as fuel. In recent years, however, there have been major installations of coal-fired units until now over half of the thermal power comes from plants fueled by coal. This trend is continuing with the construction of a second plant by Calgary Power Ltd. (Sundance) in the Wabamun area and by a Canadian Utilities coal-fired plant at Grande Cache where McIntyre Porcupine Mines Ltd. is exporting coking coal to Japan.

Alberta's total demand and potential growth have now reached a level where it is practical to install and use units of 300 MW to provide base load power much more cheaply than is possible with smaller units. Because of the abundance of low-cost fuel, nuclear plants will probably not be competitive for at least two more decades.

Alberta's major hydro-electric installations are on the Bow River and its tributaries, with one other plant on the Brazeau River. These plants, owned by Calgary Power Ltd., have a capability of 665,000 KW and feed into the provincial transmission grid. During 1972 the Bighorn hydro plant on the North Saskatchewan River is expected to be commissioned. Hydro plants in the province are assuming the role of carrying the peak load, while thermal plants carry the base load. This combination of steam and hydro plants make for optimum efficiency.

The installed capacity of all the power plants in the province is expected to be 2.9 million KW by 1973 and nearly all of the additional capacity will come from thermal plants, mainly coal-fired.

The following companies or municipalities generate or retail power to their customers.

Table 29

RELATIVE POSITIONS OF STEAM, HYDRO AND INTERNAL COMBUSTION SOURCES OF POWER - CENTRAL ELECTRIC STATIONS, ALBERTA, 1968

Method of Generation	Per cent of Capability	Per cent of Power Generated
Hydro	36.0	15.0
Steam and Gas Turbine	59.2	80.8
Internal Combustion	4.8	4.2
	100.0	100.0
Publicly Owned	24.4	27.0
Privately Owned	75.6	73.0
	100.0	100.0

Table 30

NET PLANT CAPABILITY, NET PEAK LOAD AND NET GENERATION, CENTRAL ELECTRIC STATIONS, ALBERTA, 1968

	Net Capability K. W.	Net Peak Load K. W.	Net Generation M. W. H.
Name of Company			
		Privately Owned	
Calgary Power Ltd.	1,249,000	956,500	4,393,462
Canadian Utilities Ltd. and Northland Utilities Ltd.	182,465	124,926	767,280
Total Privately Owned	1,431,465		5,160,742
Name of Municipality			
		Publicly Owned	
City of Edmonton	392,000	352,000	1,547,374 (1)
City of Lethbridge	30,700	31,000	150,607 (2)
City of Medicine Hat	40,500	40,000	207,728 (3)
Total Publicly Owned	463,200		1,905,709
Grand Total	1,894,665		7,066,451

(1) Includes 125,728,500 K. W. H. supplied to system
(2) Includes 9,274,200 K. W. H. supplied to system
(3) Includes 57,830,700 K. W. H. supplied to system

Companies or Municipalities Generating and Retailing Power to Customers:

Name of Company	Head Office Address
Calgary Power Ltd.	110 - 12 Avenue S.W. Calgary
Canadian Utilities Ltd.	Milner Building, Edmonton
Northland Utilities Ltd.	Milner Building, Edmonton
City of Edmonton	City Hall, Edmonton
City of Lethbridge	City Hall, Lethbridge
City of Medicine Hat	City Hall, Medicine Hat

Cities and Towns Purchasing and Retailing Power to Residents:

City of Calgary	City Hall, Calgary
City of Red Deer	City Hall, Red Deer
Town of Fort Macleod	Town Hall, Fort Macleod
Town of Ponoka	Town Hall, Ponoka
Town of Cardston	Town Hall, Cardston
Town of Blairmore	Town Hall, Blairmore
Town of Coleman	Town Hall, Coleman

All other towns and villages, and the majority of the hamlets in the province are served at retail by one or other of the various power companies.

According to the Dominion Bureau of Statistics in 1968, the unit cost for domestic and farm consumers was 1.79¢ per KWH. Average annual bill per domestic and farm service in Alberta was the second lowest in Canada. Rates for large industries using 1,000 H. P. and up are among the cheapest in Canada.

Comparisons of the cost of power for industry can be highly misleading unless load factors and other conditions of service are taken into account. Alberta's large steam plants, which use very low cost fuel can supply industries, such as petro-chemical plants and refineries which operate continuously at or near full load, with very low cost power. If they need large amounts of process steam such industries might be well advised to investigate the advantages of using Alberta's low cost fuels for generating their own electric power. In many cases industrial customers who purchase power can take advantage of savings that result from special types of service such as "off-peak", "interruptable", or "at will".

In determining where to locate an industry, the cost of power is a relatively insignificant factor. Where power is a major factor in the cost of a product, there may be a substantial advantage in locating a plant close to a large steam power station, thus reducing the cost of transmission. The availability in Alberta of low-cost fuel in almost unlimited quantities gives reasonable assurance that cheap power be available to industrial users at prices that will compare favourably with those in any other part of Canada.

A recent study of the rates which one power company charged various industries reveals costs per KWH varying from 1.77¢ per KWH for creameries to a low of 0.50¢ per KWH for very large high load factor plants. Any one considering establishment of an industry in Alberta would be well advised to contact the Director of Industrial Development in any one of the cities in the province or Calgary Power Ltd., 110-12 Avenue S.W., Calgary; Canadian Utilities Limited, 10040 - 104 Street, Edmonton; or Northland Utilities Limited, 10040 - 104 Street, Edmonton to obtain the specific rates applying to their type of load.



Primary metal plants in Alberta are engaged in a wide range of fabrication including steel, copper and other metal rolling, casting and extruding.

Table 31

DISPOSAL OF ELECTRIC ENERGY, BY TYPE OF CONSUMER, ALBERTA
1948 - 1967

Year	Customers No.	KW Hours	Revenue Earned \$	Per Customer \$	Per KW Hr. \$	Year	Customers No.	KW Hours	Revenue Earned \$	Per Customer \$	Per KW Hr. \$
FARM SERVICE:						POWER EXCLUDING DELIVERIES TO ELECTRIC BOILERS:					
1948	3,393	6,389,000	326,801	96.32	.051	1956	16,426	1,022,309,000	12,916,000	786.31	.013
1950	7,866	17,698,835	598,608	76.10	.034	1958	19,568	1,224,536,000	16,044,000	819.91	.013
1952	13,818	37,960,000	1,024,527	74.14	.027	1960	20,739	1,446,691,000	19,528,000	941.61	.013
1954	24,688	73,016,000	1,763,112	71.42	.024	1962	18,355	1,580,804,000	20,200,000	1,100.52	.013
1956	35,005	113,951,000	2,605,000	74.42	.023	1964	16,689	2,313,574,000	21,659,000	1,297.80	.009
1958	40,847	145,641,000	3,275,000	80.18	.022	1966	12,656	2,876,077,000	24,622,000	1,945.48	.009
1960	49,757	200,490,000	4,412,000	88.67	.022	1967	9,973	2,967,352,000	23,065,000	2,312.74	.008
1962	54,689	262,706,000	5,643,000	103.18	.021	OTHER USES (Included in Power):					
1964	58,604	314,719,000	6,139,000	104.75	.020	1964		13,650,000			
1966	59,431	391,908,000	7,087,000	119.25	.018	1966		-			
1967	60,863	433,858,000	7,758,000	127.47	.018	1967		-			
DOMESTIC SERVICE:						STREET LIGHTING ONLY:					
1948	105,324	101,159,000	3,672,869	34.87	.036	1948	280	12,308,000	330,742	1,181.22	.027
1950	126,266	146,506,165	4,786,169	37.91	.033	1950	315	13,830,000	402,262	1,277.02	.029
1952	144,541	195,276,000	6,109,507	42.27	.031	1952	379	16,811,000	474,026	1,250.73	.028
1954	165,990	282,627,000	8,000,898	48.20	.028	1954	404	18,476,000	643,455	1,592.71	.035
1956	187,217	387,309,000	9,968,000	53.24	.026	1956	480	25,585,000	742,000	1,545.83	.029
1958	214,317	500,407,000	12,209,000	56.97	.024	1958	527	38,393,000	1,251,000	2,373.81	.033
1960	240,383	666,829,000	14,868,000	61.85	.022	1960	562	53,733,000	1,434,000	2,551.60	.027
1962	261,052	816,240,000	17,583,000	67.35	.022	1962	616	71,700,000	1,869,000	3,034.09	.026
1964	281,113	980,607,000	19,593,000	69.70	.020	1964	637	93,494,000	2,465,000	3,869.70	.026
1966	298,952	1,195,873,000	22,540,000	75.40	.019	1966	663	109,390,000	2,833,000	4,273.00	.026
1967	308,676	1,262,877,000	23,515,000	76.18	.019	1967	678	118,300,000	3,146,000	4,640.12	.027
COMMERCIAL LIGHT:						FREE SERVICES					
1948	24,339	90,206,000	3,403,085	139.82	.038	LOSSES					
1950	27,530	120,235,000	4,506,545	163.70	.037	KW Hrs.					
1952	29,478	154,751,000	5,692,184	193.10	.037	1948		3,531,000		103,063,000	
1954	33,946	189,067,000	6,937,611	204.37	.037	1950		4,214,000		108,259,000	
1956	37,254	245,244,000	8,660,000	232.46	.035	1952		5,803,000		153,503,000	
1958	40,847	299,204,000	10,360,000	253.63	.035	1954		2,292,000		196,967,000	
1960	44,266	380,560,000	12,403,000	280.19	.033	1956		*		255,191,000	
1962	49,400	607,735,000	17,078,000	345.71	.028	1958		*		290,792,000	
1964	51,332	769,603,000	20,076,000	391.10	.026	1960		*		423,741,000	
1966	56,449	888,595,000	23,232,000	411.56	.024	1962		*		461,424,000	
1967	59,447	1,234,854,000	27,505,000	462.68	.022	1964		*		577,723,000	
SMALL POWER (Under 50 KW):**						1966		*		593,280,000	
1948	7,656	46,911,000	1,326,013	173.20	.028	1967		*		786,060,000	
1950	8,918	66,184,000	1,767,919	198.24	.027						
1952	9,564	80,442,000	2,211,737	231.26	.027						
1954	10,796	124,721,000	3,286,828	304.45	.026						

TOTAL ENERGY DISPOSED

Year	Customers No.	KW Hours	Revenue Earned \$	Per Customer \$	Per KW Hr. \$
1948	141,876	729,139,000	12,136,697	85.54	.017
1950	171,998	885,720,000	15,524,403	90.26	.018
1952	200,259	1,171,507,000	20,619,957	102.97	.018
1954	239,126	1,514,455,000	27,051,792	113.13	.018
1956	276,382	2,049,589,000	34,901,000	126.28	.017
1958	316,106	2,498,973,000	43,139,000	136.47	.017
1960	355,707	3,172,044,000	52,645,000	148.00	.017
1962	384,112	3,800,609,000	62,373,000	162.38	.016
1964	408,375	5,049,720,000	69,932,000	171.24	.014
1966	428,151	6,155,123,000	80,314,000	187.58	.013
1967	439,637	6,803,301,000	84,989,000	193.32	.012

* Included in "Losses"

** Included under the heading "Power Excluding Deliveries to Electric Boilers" in 1956

COAL

Coal seams in Alberta generally are confined to formations of the Cretaceous period, and in a few areas of the province, to those of the Jurassic-Cretaceous and Cretaceous-Tertiary periods. Coal formations occur in three different horizons. The oldest horizon, the Blairmore-Kootenay formation, is Lower Cretaceous in age. The two younger horizons are of Upper Cretaceous age and occur in the Belly River and Edmonton formation. The oldest and most mature seams in the Blairmore-Kootenay horizons outcrop in the east ranges of the Rocky Mountains at such places as Canmore, Nordegg, Crowsnest pass, and Mountain Park. Coal seams in the Belly River and Edmonton horizons outcrop in, or occur under, the foothills and plains.

Two chief factors that determine rank of coal are age and pressure. In general, the older coals are more mature or "harder" than the younger coals. The older Blairmore-Kootenay coals are more mature than most of the Belly River or Edmonton coals. Pressure also matures or hardens coal. Because of the intense compressive forces exerted during the uplift of the Rocky Mountains, the Belly River coal in the foothills is more mature than the Belly River coal at Wainwright. As a rule, deposits of coals of



This seed treatment plant at Lethbridge is one of many serving the needs of farmers throughout the province.

equal rank are to be found at roughly equal distances from the eastern edges of the Rocky Mountains.

The coal seams under the plains are horizontal or slope at less than five degrees. In the foothills area, the slopes may be as high as 20 degrees, while in the mountains, slopes as great as 90 degrees occur.

Coal of the sub-bituminous type underlies much of the province's plains, while bituminous coal (including coking coal) is found in the Rocky Mountain and Foothills regions. Anthracitic coal deposits are found in the Highwood coal area, west of Calgary.

"Total Reserves" include all known coal deposits. A large percentage of the coal occurs in seams that are not included in the definition of "mineable" reserves. The term "mineable" is defined to mean bituminous coal occurring in seams three feet or more in thickness and covered by less than 1,000 feet of overburden. Estimates of Alberta's "mineable" reserves of coal range as high as 48 billion tons, or roughly 48 per cent of Canada's total. "Recoverable" reserves have arbitrarily been placed at 50 per cent of the "mineable" reserves. The "recoverable" estimate is based on present mining methods and economics of extraction.

Production increased from a low of 2.1 million tons in 1962 to 3.9 million tons in 1968.

During the five year period, 1964 - 1968, coal mined per man employed rose from 2,501 to 3,559 tons. The main contributing factor to this increased efficiency is the expansion of highly mechanized strip-mining operations.

A trend to large scale operations is evident. The number of mines in operation decreased from 50 to 30 during the period, and the number of people employed declined from 1,188 to 1,103. In 1964, 56 per cent of the output was produced by three mines, whereas, in 1968, three mines produced about 74 per cent of the total output.

The coal industry in Alberta received a serious set-back during the early 1950's with the loss of the railway-locomotive market to diesel fuel. Cheap natural gas and fuel oils also replaced coal for space heating. Subsequently though, a new market developed when thermal plants for electricity generation were built at Wabamun and Forestburg to use strip-mined coal as the source of energy. Present forecasts are that by 1980 Alberta will be using 10 million tons of coal annually for electric power generation.

A large new market has developed for Canadian coal in Japan. Presently there are firm contracts for 65 million tons of coal from Alberta to be delivered to Japan within the next 15 years, and negotiations are under way which could double this figure. The Alberta Resources Railway was constructed during the 1965-1967 period to provide transportation of coking coal for the Japanese market from a deposit at Grande Cache near the junction of the Smoky River and Sheep Creek.

The development of automated unit trains for the cheap and efficient transportation of coal may open up markets in Eastern Canada for Alberta coal. The non-ferrous metallurgical industry, on the Pacific coast of the United States is a possible market for chars from Alberta coal.

New uses of coal -- such as in the production of fertilizers and activated carbon -- will result in a diversification of markets. Coal may also be increasingly used for industrial steam and conversion processes as well as in the making of liquid fuels.

In order to be competitive in world markets, Alberta's coal industry has undergone several changes in recent years. Great emphasis has been placed on strip mining, even in mountain areas. The industry is becoming increasingly mechanized and new mining techniques, such as hydraulic mining, are being tested.

Recent changes in world transportation patterns have had extensive repercussions on the Alberta coal industry. The construction of super tankers and deepwater ports at Vancouver has made economic the transportation of coal for overseas markets. The use of unit trains considerably lessens transportation costs on land. Experiments are being conducted on the feasibility of transporting coal by pipeline.

Table 32

PRODUCTION AND DISPOSITION OF COAL - ALBERTA, 1947 - 1968

		1947	1957	1962	1966	1967	1968
TOTAL TONNAGE	Tons	8,074,596	3,155,354	2,087,310	3,467,254	3,601,559	3,925,114
TOTAL VALUATION	\$	36,317,343	17,287,229	9,983,327	12,067,044	12,506,450	12,597,181
NUMBER OF MINES IN OPERATION	No.	191	93	55	37	35	30
AVERAGE NUMBER OF MEN EMPLOYED	No.	8,761	2,795	1,281	1,146	1,162	1,103
DISPOSITION OF COAL							
Railways	Tons	2,504,604	152,693	32,003	6,631	3,960	3,201
Alberta	Tons	1,671,130	876,395	901,107	2,034,814	2,019,036	2,672,852
Saskatchewan	Tons	1,475,006	680,297	347,012	376,589	504,606	175,948
British Columbia	Tons	899,403	672,527	283,651	197,521	165,372	142,589
Manitoba	Tons	583,414	247,480	153,561	115,771	93,020	73,558
Ontario	Tons	162,898	68,379	29,952	24,893	21,956	15,097
Quebec	Tons	-	165	75	-	-	-
China and Japan	Tons	42,192	40,745	316,787	709,977	773,505	809,437
United States	Tons	91,235	46,079	9,219	12,206	9,857	9,549
Other	Tons	-	-	-	8	-	54
Ships' Bunkers	Tons	4,107	-	-	-	-	-
Total Sales	Tons	7,433,989	2,784,760	2,073,367	3,478,410	3,591,312	3,902,285
Colliery Boilers	Tons	173,575	47,075	3,458	*	*	*
Colliery Railroads	Tons	1,928	1,016	550	-	-	-
Used Making Briquettes	Tons	266,178	255,131	26,565	*	*	*
Used Making Char	Tons	-	-	-	*	*	*
Used Making Coke	Tons	81,128	-	-	-	-	-
Put to Stock	Tons	48,620	269,730	280,204	113,354	105,544	74,868
Put to Waste	Tons	132,776	79,142	8,262	10,316	10,671	11,313
Lifted from Stock	Tons	39,915	280,630	262,558	128,279	100,548	-
Lifted from Waste	Tons	23,683	870	42,538	6,547	5,420	-
TOTAL OUTPUT	Tons	8,074,596	3,155,354	2,087,310	3,467,254	3,601,559	3,925,114
COAL BY-PRODUCTS							
Total Tonnage Briquettes Produced	Tons	282,898	265,645	28,631	27,904	21,503	7,236
Total Tonnage Coke Produced	Tons	52,627	-	-	-	-	-
Total Tonnage Char Produced	Tons	-	-	40	11,387	7,430	1,261

* Included in Alberta consumption

Coal is classified on the basis of standard tests. These tests determine the percentage of moisture, ash, gaseous material and fixed carbon contained in a sample. The gaseous material is commonly referred to as volatile matter.

Moisture and ash are detrimental to coal. Volatile matter makes coal burn more rapidly. Fixed carbon provides the high heat value. Heat is usually expressed in terms of British Thermal Units or B. T. U. 's per pound.

Alberta coal is classified in five groups according to these tests.

- GROUP 1 - Low volatile, non-coking coal from mountain areas. Commonly called steam coal.
 - A good storage, weather resistant coal which burns with a short, slightly smoky flame and is used mainly for generation of steam. This coal, when briquetted is also used for domestic heating.
 - Important areas where this coal is mined are: Cascade, Highwood, Nordegg.
- GROUP 2 - High volatile, coking bituminous coal from mountain areas. Also commonly called steam coal.
 - A good storage, weather resistant coal which burns with a medium long, smoky flame. It is used for railways and for steam raising in general and also used for making coke, as smithy coal, and in the cement industry.
 - Important areas of this group are: Crowsnest, Mountain Park, Smoky River (Grande Cache).
- GROUP 3 - High volatile, non-coking coal, principally from the foothills areas.
 - A good storage, weather resistant coal. It is a free-burning, non-coking coal that burns with a long, slightly smoky flame. Used for domestic and for steam raising purposes. It is a strong coal and can be shipped and stored reasonably well.
 - Important areas of this group are: Coalspur, Lethbridge, Prairie Creek, Saunders.
- GROUP 4 - A so-called domestic coal, fair storage, from prairie areas, can be stored, with care, under cover.
 - It is a free-burning, non-coking coal, that ignites easily and burns with a long, smokeless flame. Used for domestic heating and also for steam raising. It can be shipped in box cars.
 - Important areas of this group are: Carbon, Drumheller, Edmonton, Pembina, Taber.
- GROUP 5 - A so-called domestic coal, poor storage, from prairie areas.
 - It is free-burning, non-coking coal, that ignites easily and burns with a long, smokeless flame. Used for domestic heating and also for steam raising. It can be shipped in box cars.
 - Important areas of this group are: Camrose, Castor, Sheerness, Tofield.

An analysis is given in the following table for each group, but it must be understood that as there is a wide range of coals in each group the analysis given for any group is merely typical and may be far from representative of some coals in the group.

		<u>Group 1</u>	<u>Group 2</u>	<u>Group 3</u>	<u>Group 4</u>	<u>Group 5</u>
Moisture	%	1 1/2	1 1/2	10	19	27
Ash	%	8 1/2	12 1/2	10	7	7
Volatile Matter	%	15	25	34	30	28
Fixed Carbon	%	75	61	46	44	38
Heat Value	B. T. U. /lb.	14,000	13,200	10,900	9,700	8,300

ATHABASCA OIL SANDS

Major deposits of oil impregnated sands are found over an area of 21,000 square miles in northeastern Alberta. On the banks of the Athabasca River the tarry outcroppings are plainly discernible, while in other places the overburden is 2,000 feet thick. It has been estimated that these deposits contain over 700 billion barrels of crude oil from which 300 billion barrels of upgraded synthetic crude oil could be produced.

The oil sands are part of the McMurray formation which is Lower Cretaceous in age.

The oil, viscous and asphaltic, displays considerable variation in properties. The viscosity, or the oil's resistance to flow, varies from 6,000 to 600,000 poise at 50°F. The poise is a measurement of the time required for a specific volume of oil to flow through a hole of a definite size. The specific gravity (at 25°C), or the ratio of the weight of a gallon of oil to weight of a gallon of water, ranges from 1.005 to 1.025. The volatility, or readiness to evaporate, of the higher hydro-carbons present, corresponds to the heavy gasoline groups. Varying amounts of sulphur occur throughout the deposit. The crude oil is very susceptible to thermal decomposition. The oil obtained is defined as synthetic because, once separated from the sand, it must be "re-made" or reconstituted.

The synthetic crudes produced at Athabasca yield generous amounts of aromatics used in the production of phenol, styrene, polyesters, surfactants, and dyestuffs. The original oil also contains trace amounts of metals (porphorins) such as nickel which makes possible the development of an extremely diversified industry.

The Great Canadian Oil Sands Limited recovery plant, 20 miles north of the Town of Fort McMurray, began production in 1967. The leased deposit is close enough to the surface to make strip mining economical. The recovery method used is called the "hot water process." The sand is mixed with steam, then the oily "slush" is dropped into a hot water bath where the sand sinks to the bottom and the oily top is skimmed off. The resulting product, bitumin, is upgraded to produce 45,000 barrels per day of synthetic crude. In addition, approximately 3,000 tons per day of petroleum coke and 375 tons per day of elemental sulphur are produced.

The provincial Government has recently approved an application by Syncrude Canada Limited to produce 50,000 barrels a day of synthetic crude oil from the oil sands, supplemented by 25,000 barrels a day of specialty oils and 5,000 barrels a day of naphtha.

A 226 mile pipeline was built to transport the synthetic crude oil from Fort McMurray to Edmonton.

In the period 1965 to 1969, the population of Fort McMurray increased from 1,804 to 5,943. This increase is largely due to the establishment of the Great Canadian Oil Sands Limited plant. Construction of a second plant of roughly equal magnitude can be expected to have similar effects on the growth of the region.

OIL AND GAS

Energy resources are essential to industrial growth. The development of the oil and gas reserves of Alberta has contributed greatly to the progress of industrialization in the province and the rest of Canada.

Oil and gas pipelines, emanating from Alberta, span the prairie eastward and the Rocky Mountains westward to supply both central Canada and the west coast with vital sources of energy. In 1950 the Interprovincial Pipeline was completed to carry crude oil from Edmonton to Superior, Wisconsin; the line was extended to Sarnia, Ontario in 1953, and late in 1957 the pipeline was extended to Toronto. The second cross-country pipeline, the Trans Canada, was completed in 1958 to supply markets as far east as Montreal with natural gas. The Trans-Mountain pipeline, finished in 1953, and the Westcoast Transmission pipeline, completed in 1957, supply oil and natural gas, respectively, to the west coast. In 1955 the Trans-Mountain pipeline was extended to the Puget Sound area of the United States. Alberta natural gas was being exported to California by 1961 via the Alberta Gas Trunk Line, which transports the gas as far as the Crowsnest Pass region. Two interconnecting pipelines deliver the gas to California.

With 7.6 billion barrels of proved remaining reserves of crude oil, Alberta had about 87 per cent of the western Canada total at year end, 1968. These crude oil reserves are adequate to serve present markets for over 30 years at current rates of consumption. The Oil and Gas Conservation Board estimates of the remaining marketable natural gas reserves in Alberta amounted to 43.4 trillion cubic feet in 1968, also adequate for over 30 years. Proved remaining reserves of natural gas liquids and sulphur totalled 1.9 billion barrels and 140 million long tons, respectively.

In 1965 the Rainbow and Zama Lake area of northwestern Alberta became the focal point of oil well exploration and development activity. Remaining recoverable reserves from the Rainbow, Rainbow South and Zama pools were estimated at more than 672 millions of barrels at the end of 1968.

The sale of crude oil, natural gas, and related products in 1968 amounted to approximately 88 per cent of the \$1,080 million value of minerals produced in Alberta. Daily crude oil production averaged 685,000 barrels, for a yearly total of 250 million barrels. Users in other Canadian provinces purchased approximately 38 per cent of the crude oil, synthetic crude, condensate, pentanes plus and commingled butanes produced in Alberta in 1968, while United States customers received about 47 per cent of the total. Of the 1.1 trillion cubic feet of natural gas produced, about 33 per cent was sold to users in the other provinces, and approximately 44 per cent was exported to United States markets.

Canada is in a unique position in that it imports a larger proportion of its petroleum requirements than any other major oil-producing country. Oil for the Quebec and east coast consuming areas can be imported more cheaply than oil can be transported from western Canada. However, under the national oil policy, imported oil is deterred from entering markets west of the Ottawa valley. In 1968 exports to the United States almost balanced imports of crude oil into Canada. As western oil — primarily from Alberta — already saturates all markets west of the Ottawa valley, export markets appear to offer greater growth potential than domestic markets. By the mid-1970's it is thought that demand will be so great that Alberta oil can be expected to sell without prorationing.

Alberta natural gas is being supplied economically as far east as Montreal and as far south as California. The fact that in 1968, for the first time in history, U.S. additions to gas reserves failed to match withdrawals has caused concern about future supply and has focused attention to a greater degree on Canada as a source of increased exports. It is expected that export volume of natural gas will increase at a rate of about 11 per cent annually until 1973, and at a faster rate thereafter.

Most natural gas has to be processed to make it suitable for market, by removing moisture, hydrocarbon liquids and sulphur. The position of Alberta as a major region for processing of sour, wet gas is unique in the world. It has been intensified during the past decade by significant discoveries in the foothills and western plains where the gas has high liquids and sulphur content. At present there are 110 processing plants in Alberta with an aggregate raw gas capacity of nearly seven billion cubic feet per day. Another 10 are being built and several more are in the design stage.

A development of recent years has been the construction of "stripping" plants near the points of exit for large streams of pipeline gas leaving Alberta. These are designed to remove the small percentages of liquids left in the stream after primary processing in the field plants. One such plant is in operation at Empress in southeastern Alberta; another will be constructed in the same area in 1971 to process the large increase in gas to be taken east through the Trans-Canada pipeline. A plant will be completed in 1970 west of Calgary, where the Alberta-California stream runs through the Alberta Gas Trunk Line system.

Oil was produced in Alberta for many years prior to the second World War. The first oil discovery of commercial significance, a heavy crude, was at Wainwright in 1925. Similar discoveries were made later at Vermilion and Lloydminster. In 1936 the first major light crude oil discovery was made at Turner Valley which until then had produced only natural gas and naphtha gasoline. Most large oil companies established their western headquarters in Calgary, close to that first light crude oil field.

The year 1947 was significant to the economy of Alberta. In that year the Leduc oilfield was discovered. Subsequent developments have literally transformed the economy of the province. The economic base has diversified. Mining, including oil and gas, is now the most important industry in Alberta in terms of net value of production. Much of the industrial progress which has taken place in Alberta is directly or indirectly related to the development of the oil industry.

An oil and gas conservation board was established in 1938 to control or eliminate the wasteful production practices which had been particularly apparent in the Turner Valley field. The Board administers matters pertaining to drilling, production and conservation of oil and gas resources of the Province. A new crude oil proration plan introduced in 1966 becomes fully effective in 1969. Because of its adaptability to changing conditions, its positive incentives for enhanced recovery operations and encouragement of economical drilling and production methods, as well as its acknowledged equity in operation, the Alberta prorationing plan has won world acclaim as the most advanced in any oil-producing country.

Cumulative investment in the petroleum industry in Alberta at the end of 1968, in 22 years since the Leduc discovery, was approximately \$9.6 billion. Expenditures are increasing at about the same rate as revenues each year. In 1968 the Provincial Treasury received \$249 million in direct revenues from the petroleum industry. Since 1947, total provincial direct revenues from the sale of crown lands, royalties, leases, rentals, permits and licenses, amounted to approximately \$2.6 billion. These figures exclude all taxes paid and do not measure the total contribution to the economy of the province of the industry, and the extensive secondary industries which depend on it.

Table 33

PROVINCIAL GOVERNMENT REVENUE FROM MINERAL RESOURCES - PERIODS SHOWN, ALBERTA

	Total Revenue April 1, 1949 to March 31, 1965 \$	1965-66 \$	1966-67 \$	1967-68 \$	1968-69 \$	Total Revenue April 1, 1949 to March 31, 1969 \$
Coal						
Fees and Rental	1,596,888	45,940	83,540	189,366	444,322	2,360,056
Royalty	3,852,832	212,480	215,939	232,364	198,318	4,711,933
Sundry Revenue	53,613	2,373	2,303	1,616	1,352	61,256
Petroleum and Natural Gas						
Fees and Rental	425,642,045	57,017,924	52,240,051	53,824,878	55,529,456	644,254,354
Royalty	460,622,244	68,634,352	80,214,494	94,071,940	105,122,892	808,665,923
Crown Reserve Sales	784,719,783	121,050,116	106,225,024	69,726,551	121,031,178	1,202,752,652
Salt						
Fees and Rental	17,781	1,006	1,005	1,006	1,011	21,809
Royalty	155,068	18,164	18,657	20,482	20,487	232,857
Quarrying						
Fees and Rental	4,571	46	31	21	20	4,690
Royalty	759,765	88,143	83,921	79,900	80,725	1,092,453
Quartz						
Fees and Royalty	48,616	4,165	50	38,105	92,439	183,375
Placer						
Fees and Royalty	6,792	-	-	10	-	6,802
Bituminous Sands						
Fees, Rental and Royalty	5,449,888	654,638	663,547	761,211	2,008,427	9,537,712
Oil Sands						
Fees and Rental	775,715	226,772	207,083	241,131	303,446	1,754,147
Mining Miscellaneous						
Fees, Rental and Royalty	2,683,412	184,815	178,528	190,915	123,590	3,361,261
Mineral Taxation Act						
Non-Producing Area Tax	5,504,175	541,940	572,858	552,930	892,070	8,063,973
Producing Area Tax	14,993,910	1,379,885	1,292,079	1,326,667	1,459,176	20,451,716
Certificate Fees	14,837	171	207	238	129	15,581
Pipe Line Act Sundry Revenue	59,983	11,595	12,165	12,112	12,528	108,383
Administration Sundry Revenue	1,052,817	75,243	55,549	80,352	75,978	1,339,940
Landmen License Fees	-	-	-	-	11,855	11,855
TOTAL	1,708,014,735	250,149,768	242,067,031	221,351,795	287,409,399	2,708,992,728

Table 34

OIL INDUSTRY STATISTICS, ALBERTA, 1947 - 1968

	1947	1950	1953	1956	1959	1962	1965	1968
Footage Drilled								
Development	546,005	3,110,588	4,249,826	7,695,927	6,112,071	5,945,022	5,898,123	3,975,992
Outpost	-	-	323,034	215,523	339,886	346,632	1,128,668	449,892
Exploration	336,353	1,219,610	1,850,029	2,182,129	2,357,587	2,815,025	3,406,338	4,445,200
Totals	882,358	4,330,198	6,422,889	10,093,579	8,809,544	9,106,679	10,433,129	8,871,084
Well Completions								
Development								
Oil	100	719	795	1,306	818	645	775	372
Gas	30	19	82	64	144	175	114	180
Dry	21	50	169	98	128	207	211	192
Service Wells	-	-	-	6	27	12	21	38
Outpost								
Oil	-	-	43	11	16	8	68	16
Gas	-	-	24	15	20	15	41	23
Dry	-	-	35	14	19	25	89	49
Exploration								
Oil	7	34	47	51	43	35	76	143
Gas	6	21	89	59	78	82	85	90
Dry	58	169	277	274	309	352	509	553
Totals	222	1,012	1,561	1,898	1,602	1,556	1,989	1,656
Total Oil	107	753	885	1,368	877	688	919	531
Total Gas	36	40	195	138	242	272	240	293
Total Dry	79	219	481	386	456	584	809	794
Service Wells	-	-	-	6	27	12	21	38
Producing Oil Wells	502	1,995	4,504	7,390	9,216	10,809	12,771	13,733
Producing Gas Wells	177	303	404	523	832	1,257	1,800	2,356
Capped Gas Wells	119	75	393	713	981	1,388	1,515	1,597
Expenditures on Expl. & Dev. (\$)	25,000,000	150,000,000	280,000,000	400,000,000	360,000,000	365,000,000	510,000,000	610,000,000
Crude Oil Production (bbls.)	6,382,065	27,149,369	76,696,276	143,708,724	128,828,635	165,124,967	184,155,669	251,461,840
Average Daily	20,000	79,000	246,000	434,000	399,000	451,000	495,000	752,000
Possible Daily	20,000	189,000	317,000	746,000	838,000	956,000	1,150,000	1,550,000
Market Distribution								
Prairies	6,341,306	25,121,337	39,831,259	42,011,014	44,555,514	48,496,782	56,335,304	63,903,730
British Columbia	-	-	2,680,024	21,894,038	22,585,326	19,431,279	17,886,686	20,723,165
Other Canadian & Exports	-	-	25,630,021	80,325,223	63,714,793	113,210,013	135,839,706	202,601,095
Natural Gas Production (mcf)	53,321,858	74,933,207	114,147,745	200,191,107	352,733,681	843,816,821	1,290,364,470	1,642,194,881
Consumed in Alberta	39,077,953	56,367,452	71,156,973	116,938,508	153,870,277	185,718,278	228,087,785	282,787,861
Consumed outside Alberta	-	-	10,067,095	11,755,193	123,490,047	455,374,219	664,933,732	882,318,580
Gas Products								
Propane (bbls.)	-	141,070	433,083	925,716	1,593,189	3,199,390	9,134,146	14,511,833
Butane (bbls.)	-	33,906	198,401	591,638	1,149,856	2,188,951	6,111,117	9,487,923
Pentanes Plus (bbls.)	427,225	446,384	722,906	1,119,936	2,809,529	16,526,700	26,085,824	31,050,939
Sulphur (long tons)	-	-	18,298	33,464	238,644	972,351	1,538,428	2,989,588
Crown P & N.G. Reservations								
Number	114	502	396	1,051	858	670	1,067	924
Acres	11,472,501	37,123,411	23,514,752	54,636,137	38,196,179	26,427,143	49,046,047	34,148,486
Crown P & N.G. Permits								
Number	-	-	-	-	-	88	194	154
Acres	-	-	-	-	-	1,212,062	2,671,555	2,427,242
Crown P & N.G. Leases								
Number	2,458	9,351	23,343	24,584	31,220	30,237	29,610	30,528
Acres	907,624	5,769,336	19,149,799	19,212,862	28,874,344	27,529,854	28,939,445	34,110,224
Crown Natural Gas Licences								
Number	-	-	47	26	49	24	3	18
Acres	-	-	1,861,188	645,858	1,241,061	766,760	60,640	207,111
Crown Natural Gas Leases								
Number	-	-	23	265	444	813	1,045	1,194
Acres	-	-	163,917	1,308,334	1,951,937	3,536,263	4,220,085	4,400,077
Sales of Crown Reserves (\$)								
P & N.G. Leases	-	36,260,288	17,596,810	66,729,673	50,202,900	16,048,744	79,426,545	59,752,992
P & N.G. Reservations	-	-	3,698,908	1,103,633	5,777,783	3,311,768	-	1,408,098
Drilling Reservations	-	-	-	3,858,218	14,240,583	11,211,661	39,803,733	30,976,528
N.G. Licences	-	-	1,239,171	961,685	1,303,873	2,514,759	396,818	1,205,080
N.G. Leases	-	-	231,672	6,866	302,603	67,039	34,703	48,500
Total	-	36,260,288	22,766,561	72,660,075	71,827,742	33,153,971	119,661,799	93,391,198
Crown Rentals								
P & N.G.	563,597	8,584,587	20,974,141	24,669,980	31,664,033	37,633,688	56,256,600	54,071,909
Natural Gas	-	-	100,170	288,850	589,594	842,303	1,151,120	1,163,521
Total	563,597	8,584,587	21,074,311	24,958,830	32,253,627	38,475,991	57,407,720	55,235,430
Crown Royalties								
Oil	766,143	4,852,455	15,958,766	34,841,941	25,981,835	40,888,891	51,058,300	75,956,527
Gas	-	-	339,463	525,556	1,291,029	4,760,809	9,015,049	11,659,377
Gas Products	-	-	43,607	66,148	58,382	2,340,091	7,897,702	13,705,632
Total	766,143	4,852,455	16,341,836	35,433,645	27,331,246	47,989,791	67,971,051	101,321,536
REVENUE TOTALS (\$)	1,329,740	49,697,330	60,182,708	133,052,550	131,412,615	119,619,753	245,040,570	249,948,164

Table 35

ESTIMATED PROVEN RESERVES OF NATURAL GAS IN CANADA AT YEAR END, 1956 - 1968
(millions of cubic feet at 14.65 psia and 60°F.)

	1956	1958	1960	1962	1964	1966	1967	1968
Northwest Territories	29,974	29,427	37,366	61,897	55,383	117,320	107,698	156,398
British Columbia	1,590,940	1,687,626	3,097,930	4,932,600	6,931,445	7,265,690	7,752,745	7,462,938
Alberta	16,333,084	20,222,824	26,014,370	29,177,363	35,198,661	35,135,103	36,890,431	39,119,502
Saskatchewan	889,907	1,165,003	1,305,759	1,062,201	1,040,669	729,278	728,967	705,036
Manitoba	3,738	2,345	1,559	1,060	3,473	-	-	-
Total Western Canada	18,847,643	23,107,225	30,456,984	35,235,121	43,229,631	43,247,391	45,479,841	47,443,874
Eastern Canada	150,612	187,827	217,068	201,771	161,243	202,704	202,210	222,587
Total Canada	18,998,255	23,295,052	30,674,052	35,436,892	43,390,874	43,450,095	45,682,051	47,666,461

Table 36

ESTIMATED PROVEN REMAINING RESERVES OF LIQUID HYDROCARBONS IN CANADA AT YEAR END, 1956 - 1968
(In 35 Imperial Gallon Barrels which are Equivalent to 42 U.S. Gallon Barrels)
(thousands of barrels)

	1956	1958	1960	1962	1964	1966	1967	1968
Crude Oil								
Northwest Territories	53,258	52,409	51,498	50,412	49,164	47,125	47,848	46,959
British Columbia	2,482	8,958	44,956	136,577	204,040	263,784	294,246	287,246
Alberta	2,389,296	2,572,610	3,051,192	3,807,009	5,279,146	6,720,500	7,030,049	7,253,019
Saskatchewan	358,693	497,372	502,078	462,372	602,352	696,785	725,603	720,503
Manitoba	42,005	27,500	20,750	14,928	33,637	58,330	66,016	67,713
Total Western Canada	2,845,734	3,158,849	3,670,474	4,471,398	6,168,339	7,786,524	8,163,762	8,375,440
Ontario	3,636	7,055	8,068	9,404	9,294	5,222	5,072	6,093
Other Eastern Canada					13	5	90	80
Total Crude Oil	2,849,370	3,165,904	3,678,542	4,480,702	6,177,646	7,791,751	8,168,924	8,381,613
Natural Gas Liquids								
British Columbia	28,884	27,576	32,982	35,779	44,956	41,025	41,769	37,833
Saskatchewan	-	34,037	20,473	11,540	8,111	9,233	10,973	9,359
Alberta	251,050	422,580	485,066	648,021	834,683	1,208,609	1,326,126	1,588,769
Total Natural Gas Liquids	279,934	484,193	538,521	695,350	887,750	1,258,867	1,378,868	1,635,961
Total Liquid Hydrocarbons in Canada	3,129,304	3,650,097	4,217,063	5,176,052	7,065,396	9,050,618	9,547,792	10,017,574

Table 37

NATURAL GAS PRODUCTION*, BY PROVINCES, CUMULATIVE TO 1947 - ANNUAL 1948 - 1968
(millions of cubic feet at 14.65 psia and 60°F.)

	Alberta	British Columbia	Northwest Territories	Sask- atchewan	Western Canada	Percent of Total Canada	Eastern Canada	Percent of Total Canada	Canadian Total
All Time Cumulative to December 31, 1947	1,726,119	-	1,572	1,723	1,729,413	78.6	464,018	21.4	2,193,431
1948	56,566	-	154	437	57,157	85.6	9,010	14.4	66,167
1949	63,287	-	65	472	63,824	88.4	8,396	11.6	72,220
1950	72,052	-	66	816	72,934	89.7	8,371	10.3	81,306
1951	79,826	-	107	861	80,795	90.3	8,704	9.7	89,449
1952	91,380	-	135	1,139	92,655	91.6	8,504	8.4	101,159
1953	109,755	-	132	1,628	111,515	91.8	10,013	8.2	121,528
1954	128,999	60	144	4,824	134,027	92.9	10,200	7.1	144,226
1955	158,957	166	176	11,320	170,619	93.9	11,039	6.1	181,658
1956	187,983	265	274	19,696	208,218	94.1	13,002	5.9	221,219
1957	223,284	8,401	214	33,355	265,254	94.8	14,577	5.2	279,831
1958	271,462	62,959	286	41,924	376,631	95.9	16,272	4.1	392,903
1959	331,352	68,762	295	53,874	454,282	96.4	16,957	3.6	471,239
1960	410,651	84,902	329	52,450	548,332	97.0	17,086	3.0	565,418
1961	535,221	103,823	461	57,907	697,412	97.9	14,220	2.1	712,132
1962	782,724	128,349	652	61,140	972,865	98.4	15,829	1.6	988,695
1963	871,032	133,750	777	59,273	1,064,832	98.5	16,111	1.5	1,080,943
1964	993,446	146,899	768	62,809	1,203,922	98.9	13,997	1.1	1,217,920
1965	1,083,491	171,515	646	60,053	1,315,705	99.0	12,871	1.0	1,328,576
1966	1,147,260	199,421	705	66,229	1,413,615	98.9	15,723	1.1	1,429,337
1967	1,244,003	238,942	626	62,069	1,545,640	99.1	14,458	0.9	1,560,098
1968	1,429,153	272,632	709	68,446	1,770,940	99.3	12,298	0.7	1,783,238
Total	11,998,003	1,620,846	9,293	722,445	14,350,587	95.1	732,156	4.9	15,082,743

Raw natural gas production less storage and injection

Table 38

CRUDE OIL FIELDS PRODUCTION, 1914 - 1968
(millions of barrels)

	1914-1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	Total
Acheson	19.6	1.8	2.3	2.5	2.4	2.2	2.1	2.3	2.5	2.5	40.2
Bantry	0.6	0.2	0.3	0.3	0.4	1.0	1.4	1.6	1.7	2.0	9.5
Bonnie Glen	49.7	5.1	6.3	8.7	7.6	6.8	6.3	7.4	8.7	9.8	116.4
Carson Creek North	-	0.4	0.9	1.4	1.4	1.4	2.2	2.6	2.7	2.8	15.8
Clive	-	-	-	-	-	-	-	-	1.5	1.5	3.0
Fenn Big Valley	46.1	5.5	6.1	6.0	5.6	5.2	5.0	5.7	6.3	6.0	97.5
Garrington	0.5	0.4	0.7	1.1	1.2	1.5	1.4	1.0	-	-	7.8
Gilby	3.9	1.4	1.5	1.6	1.8	1.9	1.8	1.3	1.5	1.4	18.1
Golden Spike	19.5	1.5	2.9	4.2	3.7	3.1	3.5	4.6	5.3	6.8	55.1
Harmattan East	1.6	1.5	1.9	2.3	2.5	2.5	2.1	1.9	1.9	1.7	19.9
Harmattan Elkton	6.2	1.4	2.2	2.3	2.2	1.5	1.5	1.5	1.6	1.5	21.9
Innisfail	3.7	2.3	2.5	2.8	2.7	2.7	1.8	1.8	1.9	1.7	23.9
Joarcam	33.3	3.4	3.3	2.8	3.0	2.9	2.7	2.5	2.5	2.6	59.0
Joffre	20.5	6.2	5.7	4.4	3.9	3.6	2.2	1.7	1.8	1.7	51.7
Judy Creek	0.1	1.1	3.5	5.5	6.4	7.5	9.0	9.9	12.1	14.2	69.3
Kaybob	1.6	2.0	2.4	2.5	2.7	2.7	3.0	2.8	3.0	3.5	26.2
Kaybob South	-	-	-	-	0.3	1.4	1.7	1.7	1.7	1.6	8.4
Leduc-Woodbend	188.1	13.4	15.2	12.6	11.9	11.5	9.4	8.1	8.0	7.4	285.6
Medicine River	0.4	0.3	0.3	0.5	1.1	1.5	1.8	1.8	2.0	2.1	11.8
Mitsue	-	-	-	-	-	0.1	2.2	4.3	4.9	5.8	17.3
Nipisi	-	-	-	-	-	-	0.3	2.8	4.5	4.8	12.4
Pembina	159.2	39.3	42.7	38.0	39.7	40.6	38.7	37.8	37.9	39.6	513.5
Rainbow	-	-	-	-	-	-	-	2.6	9.6	13.4	25.6
Rainbow South	-	-	-	-	-	-	-	-	1.3	2.0	3.3
Red Earth	-	-	-	-	-	-	-	-	0.9	1.1	2.0
Redwater	217.0	12.6	15.4	17.7	16.4	15.5	14.2	15.4	16.5	15.9	356.6
Simonette	0.1	0.2	0.6	0.9	0.9	0.9	1.0	1.2	1.1	-	6.9
Snipe Lake	-	-	-	-	0.6	1.9	2.5	2.9	2.7	2.3	12.9
Stettler	12.1	1.6	1.8	1.6	1.5	1.5	1.4	1.3	1.3	1.3	25.4
Sturgeon Lake South	11.5	2.8	3.2	2.7	2.9	2.8	3.1	3.5	3.7	3.5	39.7
Sundre	4.1	1.2	1.2	1.3	1.0	1.0	1.0	1.1	1.1	-	13.0
Swan Hills	1.8	4.0	5.7	7.3	9.0	12.3	17.6	20.5	22.8	25.4	126.4
Swan Hills South	0.1	1.0	3.0	4.5	4.7	5.4	7.4	8.9	8.7	10.1	53.8
Turner Valley	107.9	1.2	1.1	1.2	1.2	1.2	1.1	1.0	1.0	-	116.9
Virgo	-	-	-	-	-	-	-	-	-	1.1	1.1
Virginia Hills	0.1	1.0	2.4	2.7	2.9	3.2	4.1	4.5	4.4	4.2	29.5
Wainwright	4.5	0.7	0.6	0.6	0.2	0.7	1.3	1.8	1.8	2.1	14.3
Westerose	10.2	1.0	1.5	1.9	1.7	1.5	1.4	1.6	2.2	2.3	25.3
Willesden Green	2.0	0.9	1.6	2.2	1.9	2.2	2.3	3.0	3.4	3.9	23.4
Wizard Lake	25.9	2.3	3.5	4.6	4.3	3.6	3.3	4.2	4.8	5.5	62.0
Zama	-	-	-	-	-	-	-	-	2.7	6.1	8.8
Other Fields and Areas	91.3	12.8	15.5	16.4	18.5	20.1	21.8	24.0	26.2	29.5	276.1
Production		130.5	157.8	165.1	168.2	175.4	183.6	202.6	230.2	250.7	2,707.3
Cumulative Total	1,043.2	1,173.7	1,331.5	1,496.6	1,664.8	1,840.2	2,023.8	2,226.4	2,456.6	2,707.3	

Table 39

CRUDE OIL PRODUCTION, BY PROVINCES, CUMULATIVE TO 1947 — ANNUAL 1948 - 1968
(thousands of barrels)

	Alberta*	British Columbia	Manitoba	Northwest Territories	Saskatchewan	Western Canada	Percent of Total Canada	Eastern Canada	Percent of Total Canada	Canadian Total
All Time Cumulative to December 31, 1947	82,130	-	-	2,464	675	85,269	73.0	31,536	27.0	116,823
1948	10,505	-	-	350	843	11,698	98.3	198	1.7	11,896
1949	19,768	-	-	183	780	20,731	98.7	280	1.3	21,011
1950	27,149	-	-	189	1,040	28,378	99.1	268	0.9	28,646
1951	45,836	-	12	228	1,247	47,323	99.6	212	0.4	47,535
1952	58,837	-	107	314	1,697	60,955	99.7	207	0.3	61,162
1953	76,702	-	656	317	2,791	80,466	99.6	314	0.4	80,780
1954	87,593	-	2,148	370	5,423	95,534	99.6	426	0.4	95,960
1955	112,853	1	4,146	405	11,317	128,722	99.6	538	0.4	129,260
1956	143,682	148	5,786	449	21,078	171,143	99.6	614	0.4	171,787
1957	136,766	345	6,090	421	36,861	180,483	99.6	643	0.4	181,126
1958	112,471	514	5,829	445	44,626	163,885	99.5	794	0.5	164,687
1959	128,802	865	5,056	422	47,440	182,585	99.4	1,016	0.6	183,601
1960	130,499	868	4,764	455	51,910	188,496	99.5	1,019	0.5	189,515
1961	157,767	1,016	4,480	487	55,859	219,609	99.5	1,161	0.5	220,770
1962	165,098	8,905	3,927	598	64,432	242,960	99.5	1,145	0.5	244,104
1963	168,670	12,515	3,771	610	71,303	256,869	99.5	1,213	0.5	258,082
1964	175,089	11,525	4,417	608	81,385	273,024	99.5	1,251	0.5	274,277
1965	183,728	13,471	4,946	645	87,789	290,579	99.6	1,283	0.4	291,862
1966	202,508	16,638	5,231	750	93,218	318,345	99.6	1,331	0.4	319,675
1967	230,211	19,657	5,585	678	92,539	348,670	99.6	1,249	0.4	349,919
1968	250,675	22,151	6,205	752	91,880	371,663	99.7	1,084	0.3	372,747
Total	2,707,339	108,619	73,156	12,140	866,133	3,767,387	98.7	47,781	1.3	3,815,170

* Some condensate included prior to 1951

CONSTRUCTION

The Alberta construction industry in 1969 provided employment for more than 65,000 people, who were paid \$490 million in salaries and wages. Construction materials valued at \$653 million were purchased. The industry ranked second to mining in net value of production, accounting for \$760 million or 23.6 per cent of the total value added in 1969. Since 1964, the total value of construction work performed in Alberta has exceeded \$1 billion annually, reaching approximately \$1.5 billion in 1969. Per capita value at \$1,000 was well above the national average of \$630.

Building construction permit values indicate trends of construction activity in various areas. Annual permits value totals have increased substantially in each of the 10 cities, just as all have experienced short term fluctuations around their rising trends.

Table 40

CONSTRUCTION OF DWELLING UNITS - ALBERTA AND CITIES OF 5,000 POPULATION OR MORE, 1948 - 1968

	Alberta	Calgary*	Edmonton*	Lethbridge	Medicine Hat	Red Deer	Camrose	Lloyd- minster (pt.)	Grande Prairie	Wetaskiwin
1948	6,223	1,375	1,784	226	258	**	**	**	**	**
1949	9,411	1,986	2,361	356	199	**	**	**	**	**
1950	7,266	1,976	2,776	453	117	**	**	**	**	**
1951	6,057	1,882	2,464	260	90	**	**	**	**	**
1952	6,204	2,092	2,864	269	137	92	**	**	**	**
1953	9,854	3,316	3,701	320	155	198	**	**	**	**
1954	10,285	3,167	3,873	384	214	181	**	**	**	**
1955	10,610	3,223	4,076	445	193	276	**	**	**	**
1956	11,622	3,880	3,350	349	200	180	**	**	**	**
1957	9,948	2,919	2,957	213	245	107	32	**	42	**
1958	13,562	4,923	4,702	354	284	214	25	16	171	**
1959	14,183	5,392	4,995	544	333	312	59	50	59	**
1960	11,477	4,508	3,328	418	285	227	85	27	72	**
1961	10,545	3,806	3,212	291	275	328	67	34	94	**
1962	13,493	4,613	5,157	306	245	444	72	31	197	74
1963	12,419	3,783	4,960	256	211	468	81	47	238	93
1964	12,096	3,648	4,837	223	258	503	94	39	181	62
1965	11,355	3,924	4,226	177	174	205	83	63	97	33
1966	10,717	3,752	4,478	114	90	87	53	51	80	30
1967	11,310	4,299	4,477	124	129	70	**	**	125	**
1968	15,418	4,301	7,772	296	108	156	**	**	95	**

* Metropolitan Area

** Figures not available

The value of residential construction peaked in 1962 then fell until 1966, but since has begun to rapidly increase, reflecting rising costs and the high level of demand for housing to satisfy present shortages. A high level of activity in institutional and commercial construction has more than offset the abatement in industrial construction.

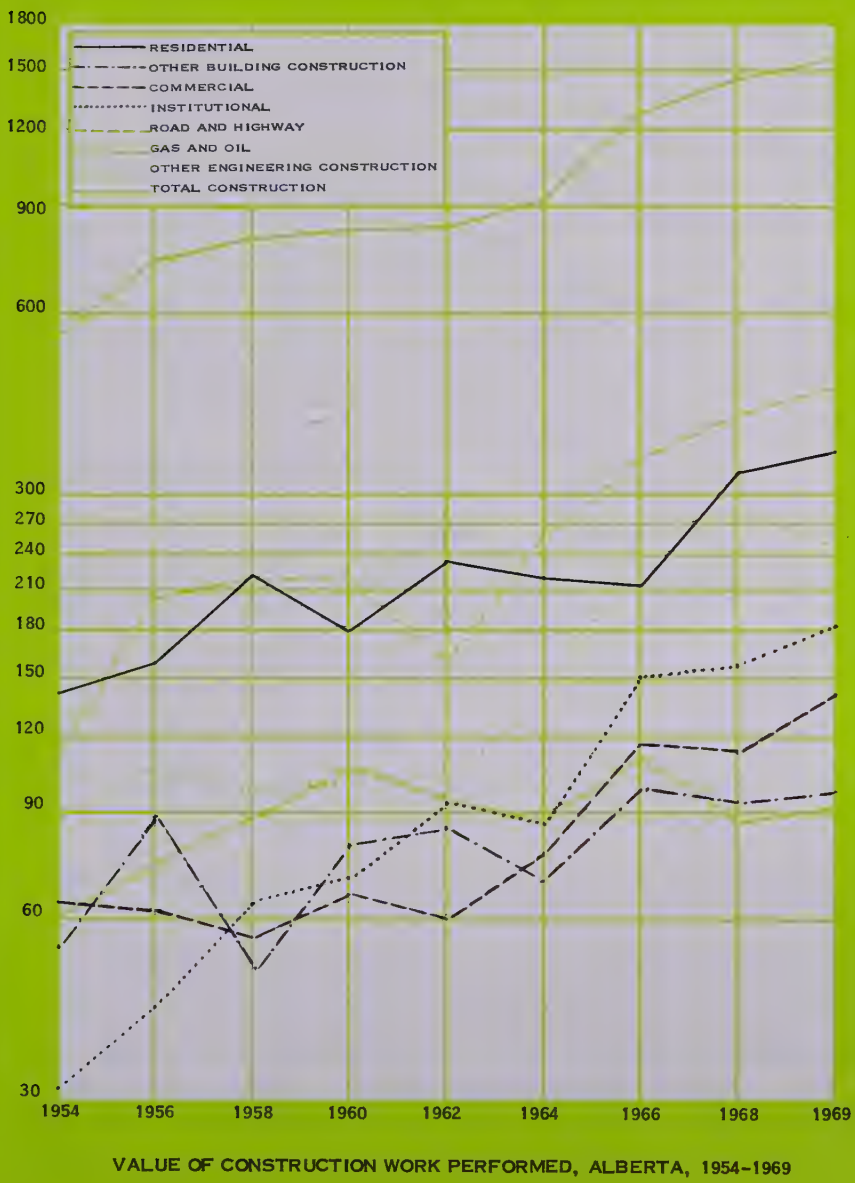


Table 41

VALUE OF CONSTRUCTION WORK PERFORMED - ALBERTA, 1954 - 1969
(thousands of dollars)

	1954 Value	1955 Value	1956 Value	1957 Value	1958 Value	1959 Value	1960 Value	1961 Value
Total Construction	550,258	623,605	725,556	707,005	787,336	818,597	815,793	876,719
Total Building Construction	287,976	300,476	345,362	331,580	384,768	397,442	389,184	390,230
Residential	140,200	140,100	155,600	154,000	218,600	216,800	177,400	195,300
Industrial	16,722	23,975	37,297	23,198	16,142	17,644	25,368	13,792
Commercial	63,416	66,278	60,844	61,097	54,654	55,954	65,180	63,733
Institutional	30,977	36,811	41,976	56,041	62,843	69,846	68,668	60,620
Others	36,661	33,312	49,645	37,244	32,529	37,198	52,568	56,785
Total Engineering Construction	262,282	323,129	380,194	375,425	402,568	421,155	426,609	486,489
Road, Highway & Aerodrome	60,766	69,219	74,148	92,367	87,298	99,465	106,922	101,099
Waterworks & Sewage Systems	19,167	19,982	28,745	21,155	22,001	24,245	17,819	16,603
Dams & Irrigation	7,383	7,784	9,252	8,113	6,970	6,489	5,894	7,545
Electric Power	12,814	17,578	21,483	19,721	17,693	19,052	20,415	20,768
Railway, Telephone & Telegraph	29,167	25,527	29,980	35,127	32,706	35,487	36,455	32,299
Gas & Oil Facilities	113,221	166,822	199,603	179,328	216,840	212,546	218,300	282,759
Other Engineering	19,764	16,217	16,983	19,614	19,060	23,871	20,804	25,416
Salaries and Wages	172,931	187,178	25,670	223,460	229,400	248,251	244,218	270,128
Cost of Materials Used	247,360	284,360	325,543	292,052	355,157	367,511	370,242	386,068
Average Number of Employees (No.)	50,934	52,617	60,174	57,866	57,141	58,931	57,070	60,453
	1962 Value	1963 Value	1964 Value	1965 Value	1966 Value	1967 Value	1968(1) Value	1969(2) Value
Total Construction	820,209	861,795	919,871	1,093,666	1,276,408	1,348,237	1,465,393	1,561,152
Total Building Construction	463,368	428,792	442,900	479,554	571,269	622,652	687,403	768,825
Residential	229,500	221,800	214,200	215,200	209,700	244,600	326,600	353,600
Industrial	19,570	21,460	21,641	23,752	28,496	26,683	22,751	20,093
Commercial	58,679	73,418	75,596	89,948	116,263	116,342	113,083	139,337
Institutional	91,793	69,721	85,048	103,128	148,460	175,896	155,651	180,096
Others	63,826	42,393	46,415	47,526	68,350	59,131	69,318	75,699
Total Engineering Construction	356,841	433,003	476,971	614,112	705,139	725,585	777,990	792,327
Road, Highway & Aerodrome	94,378	91,866	87,003	94,271	105,531	117,233	87,296	90,804
Waterworks & Sewage Systems	18,209	22,146	26,335	25,371	28,536	32,983	43,364	51,419
Dams & Irrigation	9,146	9,208	7,793	7,558	9,414	10,972	12,799	15,711
Electric Power	22,216	24,312	21,346	24,665	24,811	31,888	50,527	49,258
Railway, Telephone & Telegraph	32,461	37,575	41,049	44,879	59,660	88,932	72,801	50,519
Gas & Oil Facilities	159,687	224,126	254,276	344,270	345,670	342,052	408,386	452,301
Other Engineering	20,744	23,770	39,169	73,098	131,517	101,525	102,817	82,315
Salaries and Wages	263,049	270,534	282,535	333,813	383,463	424,120	460,341	490,193
Cost of Materials Used	373,472	391,461	418,845	509,543	592,698	557,540	611,145	652,549
Average Number of Employees (No.)	55,669	53,730	53,463	58,591	59,509	63,378	65,888	65,657

(1) Preliminary (2) Intentions

Building construction dollar volume, which hovered around \$400 million a year from 1958 to 1963, now amounts to \$768 million annually.

Engineering construction volume has increased steadily also, rising to an annual rate of about \$792 million in 1969.

The insistent and growing demand for housing resulting from rising family formation rates and increasing urbanization, has resulted in pressures on the housing industry and its suppliers.

Historically an uncertain and volatile sector, the building construction industry may now provide stable, year round employment, with the introduction of new techniques such as the enclosing of building projects, the use of portable heaters, and better scheduling of phases of construction.

Table 42

VALUE OF BUILDING PERMITS ISSUED, BY CENSUS DIVISIONS AND BY CITIES, ALBERTA, 1948 - 1969
(thousands of dollars)

	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Division No. 1 Medicine Hat	1,007 942	1,004 971	1,355 1,259	1,623 1,580	2,431 2,373	4,555 3,961	2,789 2,458	22,528 22,266	4,765 4,473	3,188 3,188	6,007 5,604
Division No. 2 Lethbridge	4,591 4,464	5,271 4,666	5,068 4,479	5,427 4,821	5,477 4,742	9,170 7,383	10,282 9,020	7,384 6,356	8,101 7,001	5,830 4,655	10,060 7,780
Division No. 3	583	271	760	690	700	894	521	641	1,068	1,877	1,372
Division No. 4	66	76	35	47	86	317	223	413	653	579	519
Division No. 5 Drumheller	441 302	333 134	529 346	626 131	527 287	898 124	511 311	665 239	606 175	523 184	1,188 213
Division No. 6 Calgary	14,620 14,003	22,412 21,979	26,405 25,981	23,203 22,322	39,398 38,785	43,745 42,145	47,418 46,700	61,158 58,897	65,510 58,960	61,185 56,014	112,686 101,551
Division No. 7	725	559	596	865	1,077	2,042	1,306	765	2,038	1,651	2,046
Division No. 8 Red Deer	2,038 1,213	2,890 1,558	2,602 1,763	1,957 1,009	3,037 2,276	5,658 3,886	5,321 3,780	5,462 4,167	5,408 3,525	5,321 3,246	7,898 4,729
Division No. 9	54	52	45	40	129	43	19	6	13	40	67
Division No. 10 Camrose Lloydminster	919 418 -	843 340 -	2,053 512 643	2,263 930 498	3,066 1,151 900	4,251 2,014 851	3,434 1,551 787	3,378 1,542 374	3,179 941 315	4,741 1,277 880	4,426 1,249 869
Division No. 11 Edmonton Wetaskiwin	27,777 27,123 220	40,859 40,212 359	48,124 46,849 271	38,323 36,401 170	40,237 37,066 564	60,662 55,020 1,280	72,112 68,329 621	68,859 58,719 370	84,798 69,404 636	80,056 64,379 752	103,254 72,445 548
Division No. 12	317	532	456	281	384	1,133	1,251	710	1,044	1,577	2,193
Division No. 13	52	102	549	495	296	484	815	447	606	555	968
Division No. 14	45	154	330	102	366	405	604	1,045	6,461	2,267	2,667
Division No. 15 Grande Prairie	302 237	1,187 680	708 262	1,415 583	1,874 787	1,333 527	1,224 522	2,993 1,746	3,966 2,101	3,461 2,454	3,058 1,581
TOTAL ALBERTA	53,537	76,545	89,615	77,367	99,085	135,590	147,830	176,454	188,216	172,851	258,409
TOTAL 10 CITIES	48,922	70,899	82,365	68,445	88,931	117,191	134,079	154,676	147,531	137,029	196,569

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Division No. 1 Medicine Hat	7,953 7,557	5,794 4,960	6,739 6,739	5,877 5,607	4,998 4,533	4,684 4,247	4,433 3,769	3,541 3,107	5,462 4,942	7,168 6,436	6,059 5,385
Division No. 2 Lethbridge	12,932 9,082	7,716 5,084	8,563 6,634	12,490 9,243	9,891 6,888	8,306 5,600	11,784 7,505	8,502 4,006	15,697 12,776	13,992 10,121	22,089 17,684
Division No. 3	1,613	1,582	2,326	2,338	1,634	1,783	1,799	2,770	2,493	5,081	3,681
Division No. 4	794	392	433	370	911	698	1,311	660	632	1,104	394
Division No. 5 Drumheller	2,184 970	1,489 871	1,244 363	2,944 1,910	2,509 1,358	1,849 339	7,032 6,214	4,295 2,714	6,587 5,164	2,365 1,147	2,891 2,160
Division No. 6 Calgary	114,005 98,398	77,421 68,924	81,706 70,376	92,648 87,918	103,064 90,977	103,718 95,559	135,347 129,028	118,879 114,295	141,666 136,719	190,819 183,129	178,755 172,372
Division No. 7	1,552	1,498	1,920	4,416	2,253	2,507	2,405	2,420	2,748	3,243	2,658
Division No. 8 Red Deer	12,536 8,309	9,428 5,970	10,896 6,920	15,603 10,326	19,342 11,029	11,269 7,979	9,980 7,023	11,834 7,990	8,642 5,777	9,538 6,276	11,196 7,242
Division No. 9	6	474	94	375	1,055	2,090	3,004	1,751	3,590	2,956	2,211
Division No. 10 Camrose Lloydminster	6,177 2,074 1,583	5,677 2,176 1,082	5,713 1,447 1,546	8,534 4,101 1,131	8,914 2,043 2,005	9,225 2,474 2,360	8,381 1,621 1,553	8,027 3,255 2,045	11,558 4,411 4,556	7,896 3,397 1,554	7,878 1,541 2,361
Division No. 11 Edmonton Wetaskiwin	100,111 70,842 1,204	79,684 56,100 1,374	101,283 68,589 1,867	123,422 90,250 1,680	105,028 75,774 2,197	118,803 103,111 767	141,008 125,283 2,604	144,844 135,407 938	153,784 140,357 728	193,729 165,805 2,219	211,505 170,094 2,111
Division No. 12	3,161	1,003	3,430	2,827	3,054	4,236	4,438	5,396	9,303	6,901	7,160
Division No. 13	1,368	1,760	1,212	2,227	2,194	1,877	3,177	3,167	6,199	4,138	3,357
Division No. 14	2,216	315	1,834	2,041	1,971	8,283	5,112	2,909	4,984	3,630	4,180
Division No. 15 Grande Prairie	3,644 2,084	4,888 2,532	4,985 2,727	8,057 4,378	8,457 3,877	9,485 2,878	8,852 3,065	11,281 3,189	18,008 2,183	16,459 5,366	13,924 3,719
TOTAL ALBERTA	270,252	199,121	232,378	284,169	275,275	288,813	348,063	330,276	391,353	469,019	477,939
TOTAL 10 CITIES	202,103	149,073	167,208	216,544	200,681	225,314	287,665	276,946	317,613	385,450	384,668

AGRICULTURE

According to the 1966 Alberta census there are 69,411 farms or holdings each with an annual sales of \$50 or more. They occupy 49 million acres of farm land. About 27.3 million acres are cultivated and utilized as follows: under crops 17.7 million acres; cultivated pasture, 2.3 million; summerfallow, 6.7 million. About 0.6 million acres comprise the farmsteads. Of the 69,000 farms, 48,971 are regarded as commercial, each with annual sales of \$2,500 or more. In total they occupy 41 million acres.

It is estimated that 68 million acres of land in Alberta are suitable for agricultural purposes. Thirty million acres are classified as good to fair arable land and 10 million as fair to poor arable. The remainder may be cultivated and utilized as permanent pasture or hay meadow.

Alberta's agricultural resources are continuing to be developed. The rate of development will depend largely on the expansion of foreign markets for cereal grains, and on the expansion of domestic markets for meat, dairy products and other perishable commodities. It will depend as well on improved techniques of farming, and on government policy relating to land conservation and use.

A farm industry structure with small family farms predominating is evolving into one in which relatively larger, and frequently multiple family, farms are becoming more prevalent. Farmers recognize that to compete on narrow marketing margins, larger, more efficient economic units are essential.

Changes in industry structure are not likely to cause extensive changes in the general pattern of agricultural production already established. Farming systems and practices now in effect are reasonably well adapted to soil and climatic conditions insofar as institutional factors such as the Canadian Wheat Board and government policies permit. The south is devoted largely to cattle ranching and wheat growing on a specialty basis. Irrigation has made possible the growing of sugar beets and other vegetables for processing and the fresh trade. Mixed farming predominates in central regions, with livestock receipts providing the greater part of farm cash income. In parts of the Edmonton and Calgary areas a large portion of the total farm livestock revenue is derived from the sale of dairy products. In the Peace River country production of forage seeds, rape, and flaxseed crops, for cash sale, is important. In recent years livestock production has become more and more important and has established an on-the-farm market for coarse grains.

Broader markets are being developed for many agricultural products. Population is increasing and consumer demand and preferences are changing. Individual in-

comes are rising. As this occurs per capita consumption of meats, vegetables and fruits increases. However, the productivity of the agricultural industry has proved capable of rising at a greater rate than markets are developed.

There are many possibilities for further development of secondary industry based on agriculture. Larger markets in western Canada will permit expansion of the production, processing and marketing of specialty crops grown in Alberta. The enlargement of the local and national market for canned vegetables and oilseed products may eventually increase the competitive advantage of Alberta producers and lead to a reduction in imports.

Agriculture is one of the more important industries in Alberta both in terms of value of production and in number of people employed in both primary and subsequent phases of the production process. Processing plants are well established for meat packing, flour milling, dairy products, vegetable canning and sugar refining.

Alberta's livestock production can be increased substantially. The expansion of cattle feeding in Alberta and improved refrigerated transportation methods have resulted in an increase in the proportion of livestock processed in Alberta and will likely permit even more expansion in meat packing operations.

Population and consumer income growth, combined with an apparent consumer preference for beef over other meats, will likely encourage a longer run expansion of the cattle-raising industry as compared with other livestock and poultry industries. The more restricted opportunity for beef cattle raising in the short run may result in a swing towards hog production.

Flour milling capacity increases slowly in relation to the growth of regional population. A growing home market may encourage the introduction of more plants producing breakfast foods, cake mixes, and other cereal grain products.

Fewer but large and efficient plants for processing honey, dairy and poultry products, are to be expected. The production and consumption of pasteurized milk will match the increase in population of towns and cities. Pasteurizing plants are expected to increase in size rather than number in the larger consuming areas. "Foreign" varieties of cheese are being manufactured and marketed in the larger cities.

Artificial incubation of chicks and turkey poult has resulted in the development of the hatchery service industry.

The economies of large scale operations and labour specialization in poultry dressing plants, associated with consumer preference for oven-ready or cooked poultry meat, also has led to the growth of secondary specialized processing industries.

Animal feeds manufacturing will continue to increase due to rapid development of large - scale specialized cattle feeding operations, and rising demands from the poultry, hog and dairy industries. Managers of large feed lots frequently install their

own feed mills, which may curtail expansion of commercial feed manufacturing opportunities.

White spring wheat, commercial mustard, flaxseed and rapeseed are grown. The wheat is milled into cake and pastry flours in the province. Plants for processing the other crops are now operating. Even though these crops are of minor volume as compared with some of the other field crops they provide an important additional source of revenue and employment in certain areas of the province. Rapeseed has become a major crop only in the last ten years and is now grown in most parts of Alberta. Rapeseed oil extraction could expand in importance.

New specialty crops, and related industrial opportunities, are most likely to be introduced in southern Alberta. Higher summer temperatures, longer growing seasons, and irrigation make possible the production of many crops that cannot be grown successfully in central and northern areas. New processing plants and marketing agencies for these types of crops are either in operation or in development stages at the present time and will become more important to the agricultural industry.

Ample soils of suitable texture are available in irrigated areas for the growing of vegetable crops. Sugar beet production is already important. An increasing variety and volume of other vegetables are produced for immediate consumption and for canning. Well established ex-provincial supplies presently provide strong competition.

Recent organization of grower associations and marketing cooperatives along with increased volume should help to improve the local competitive position. Varieties of green peppers and tomatoes suited to Alberta climatic conditions have been developed but are not yet grown on a commercial scale. Progress is being made in finding solutions to problems associated with cooling and processing fresh vegetables with in-season hydro-cooled sweet corn now available. Improved storage methods and equipment have extended the period during which quality can be maintained for all fresh vegetables. As a result Alberta grown carrots, turnips and potatoes can now be marketed throughout the year.

In southern Alberta, new plants and warehouses have been built for grading, packaging and storing potatoes. Potatoes are processed into potato chips, french fries and granules for export. An Alberta Potato Commission has been established for the purpose of advertising and promoting the sale of Alberta grown potatoes. Since its inception expanded markets have resulted.

Horticultural practice under glass is most extensively developed at Medicine Hat. Flowers, cucumbers and tomatoes are the main crops. The possibilities of using greenhouses for starting transplants for field growth have not yet been exploited.

Table 43

ALBERTA PRODUCTION OF
MUSTARD, FLAXSEED AND RAPESEED,
1964 - 1968

	Mustard lbs.	Flaxseed bu.	Rapeseed bu.
1964	23,000,000	4,300,000	5,300,000
1965	61,920,000	4,900,000	9,500,000
1966	81,000,000	5,500,000	11,000,000
1967	76,950,000	2,000,000	12,200,000
1968	126,000,000	4,300,000	7,200,000

Table 44

LIVESTOCK ON FARMS - PROVINCIAL COMPARISONS, 1968
(thousands of head)

	Cattle	Hogs	Sheep	Horses	Chickens	Turkeys
Alberta	3,322	1,245	245	95	7,940	1,040
Saskatchewan	2,223	508	118	65	5,140	550
Manitoba	1,037	526	41	38	6,380	870
British Columbia	525	41	58	28	7,390	550
Total Western Canada	7,107	2,320	462	216	26,850	3,010
Total Eastern Canada	5,459	3,362	429	144	49,941	5,246
Total Canada	12,566	5,682	891	360	76,791	8,256

Table 45

FARM MACHINERY AND ELECTRIC POWER, BY CENSUS DIVISIONS, ALBERTA - 1966

		Alberta	Census Division 1	Census Division 2	Census Division 3	Census Division 4	Census Division 5	Census Division 6	Census Division 7
FARM MACHINERY									
Automobiles	No.	53,171	1,744	3,996	2,089	1,479	3,689	3,999	4,012
Motor Trucks	No.	85,559	3,537	8,213	3,818	3,060	6,993	6,400	6,264
Tractors	No.	112,245	3,650	9,132	4,355	3,540	6,930	7,758	8,226
Grain Combines	No.	42,838	1,671	3,224	1,540	1,507	3,512	2,715	3,541
Pick-Up Hay Balers	No.	25,161	977	1,901	1,227	945	1,514	2,000	1,989
ELECTRIC POWER									
Census -Farms Reporting	No.	56,189	1,615	4,048	2,160	1,480	3,390	4,249	4,049
		Census Division 8	Census Division 9	Census Division 10	Census Division 11	Census Division 12	Census Division 13	Census Division 14	Census Division 15
FARM MACHINERY									
Automobiles	No.	5,018	88	7,634	6,984	2,466	4,383	613	4,977
Motor Trucks	No.	7,361	205	10,327	8,846	3,586	6,602	974	9,373
Tractors	No.	10,388	298	14,870	12,813	5,838	10,738	1,552	12,157
Grain Combines	No.	3,578	34	6,227	4,168	1,594	3,806	235	5,486
Pick-Up Hay Balers	No.	2,478	73	3,663	2,962	1,184	2,256	338	1,654
ELECTRIC POWER									
Census-Farms Reporting	No.	5,700	143	7,513	7,430	2,741	5,325	673	5,673

Table 46

LIVESTOCK AND POULTRY ON FARMS, BY CENSUS DIVISIONS, ALBERTA - 1966

		Alberta	Census Division 1	Census Division 2	Census Division 3	Census Division 4	Census Division 5	Census Division 6	Census Division 7
LIVESTOCK									
Horses	No.	93,729	3,229	6,009	7,864	5,855	5,019	12,988	7,397
Cattle	No.	3,439,734	168,029	296,614	258,708	212,495	201,599	384,896	324,252
Hogs	No.	1,092,672	11,415	68,028	39,440	8,445	53,593	77,660	58,017
Sheep	No.	301,397	22,759	53,568	83,150	10,746	10,444	20,322	6,318
POULTRY									
Hens and Chickens	No.	8,440,447	155,557	700,050	249,928	108,846	614,484	1,179,964	386,437
Turkeys	No.	951,124	11,869	89,012	27,292	1,922	172,391	84,342	16,501
Ducks	No.	91,454	2,053	15,008	15,743	3,949	8,535	5,136	4,107
Geese	No.	79,886	3,338	20,080	13,015	1,769	6,256	3,966	5,132
		Census Division 8	Census Division 9	Census Division 10	Census Division 11	Census Division 12	Census Division 13	Census Division 14	Census Division 15
LIVESTOCK									
Horses	No.	8,765	1,981	9,322	7,436	5,201	4,493	1,423	6,747
Cattle	No.	352,677	20,418	396,233	289,440	136,101	228,274	33,744	136,254
Hogs	No.	151,851	1,482	170,285	161,285	84,902	137,996	8,311	59,962
Sheep	No.	26,334	1,036	7,071	15,977	7,251	19,493	5,561	11,367
POULTRY									
Hens and Chickens	No.	437,186	5,930	1,269,525	1,768,001	391,550	677,335	81,160	414,494
Turkeys	No.	14,442	138	162,059	216,154	18,223	130,959	566	5,254
Ducks	No.	4,414	11	12,607	8,596	2,760	4,896	738	1,901
Geese	No.	5,177	67	6,491	4,982	2,205	4,763	912	1,733

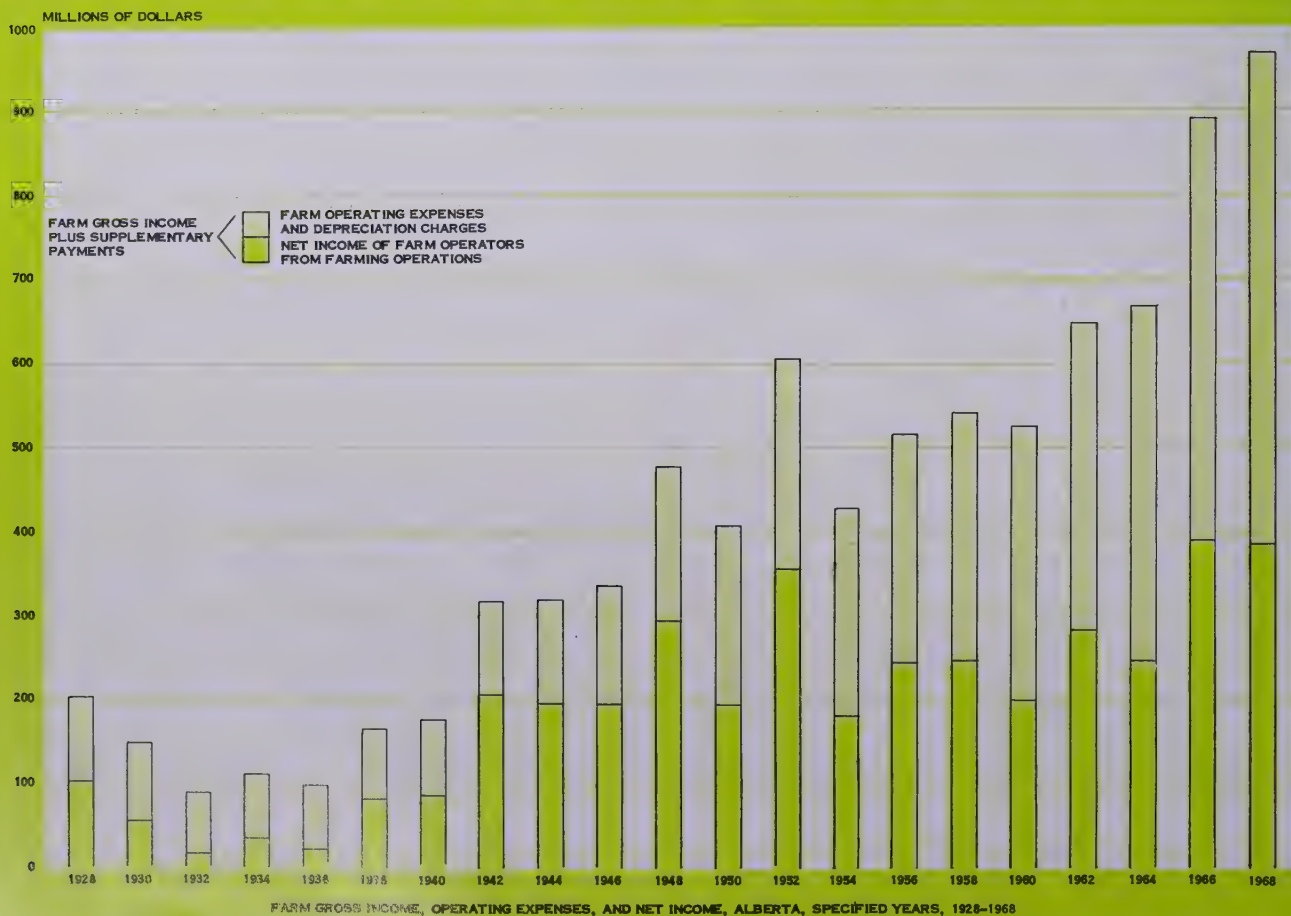
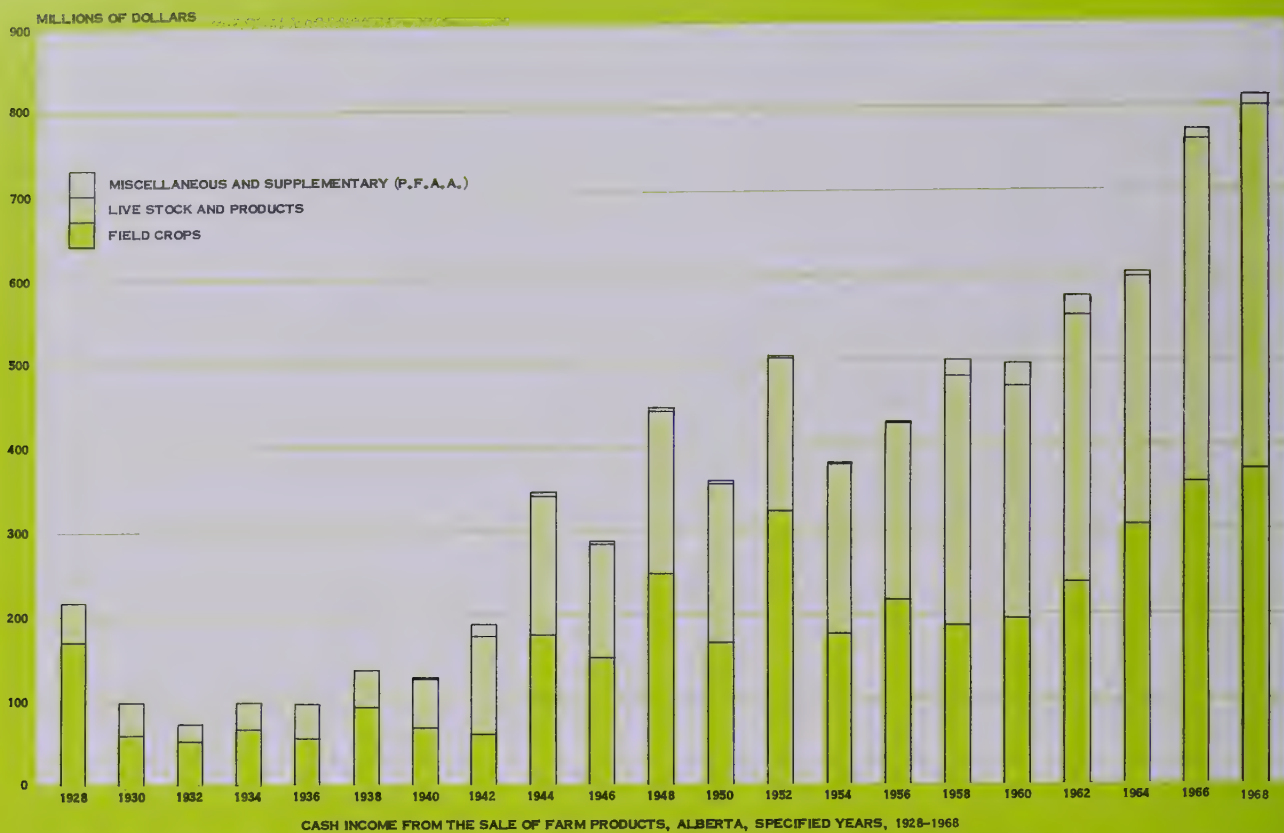


Table 47

CASH INCOME FROM THE SALE OF FARM PRODUCTS - ALBERTA, 1950 - 1968
(thousands of dollars)

				C. W. B. * Net Cash Advance Payments				
	Wheat	Oats	Barley		Rye	Flaxseed	Rapeseed	Sugar Beets
1950	113,270	11,606	18,980		3,077	793		5,813
1951	179,293	12,892	27,858		4,478	2,143		7,065
1952	204,225	30,281	56,689		7,288	5,337		7,116
1953	187,811	20,645	53,006		3,780	4,260		6,660
1954	107,367	15,038	29,501		3,801	3,839		5,992
1955	100,231	7,562	26,778		1,901	6,341		5,905
1956	134,720	11,470	34,598		3,857	10,215		6,579
1957	116,242	8,996	28,351	4,375	1,086	14,048		8,367
1958	113,025	5,797	33,515	335	1,705	9,830	1,087	7,605
1959	121,337	4,150	36,348	792	1,326	16,706	823	5,565
1960	118,441	6,033	30,256	3,750	889	12,522	3,484	7,229
1961	140,871	11,658	31,567	- 5,118	1,545	13,872	8,096	6,076
1962	149,521	11,025	37,929	233	1,603	10,791	5,019	7,282
1963	143,782	10,703	32,220	6,720	1,746	7,792	7,259	13,540
1964	205,562	11,450	46,456	- 4,719	2,227	12,051	11,942	8,027
1965	200,462	7,651	46,804	3,442	2,301	8,715	14,723	5,675
1966	235,604	9,096	55,438	- 1,783	3,805	11,176	19,758	6,155
1967	245,085	9,894	68,323	292	1,768	11,822	21,362	5,854
1968	233,067	8,507	67,281	12,918	1,159	4,911	15,232	7,024

	Potatoes	Vegetables	Other Crops	Total Crops	Cattle and Calves	Hogs	Sheep and Lambs	Dairy Products
1950	1,529	1,036	8,022	164,126	93,771	49,803	3,203	24,357
1951	1,476	972	5,260	241,437	95,390	58,444	2,077	26,955
1952	2,269	1,158	7,542	321,905	72,366	55,690	2,275	26,727
1953	1,900	1,230	7,823	287,115	69,061	64,243	1,642	28,928
1954	1,547	1,016	8,225	176,326	74,391	67,848	1,638	29,431
1955	1,747	1,167	7,515	159,147	77,012	60,365	1,903	30,870
1956	1,823	1,175	11,481	215,918	85,731	59,266	2,184	31,017
1957	1,173	1,198	7,676	191,512	108,883	65,449	2,635	33,214
1958	1,121	1,142	10,977	186,139	146,419	77,483	2,741	36,170
1959	1,169	1,253	9,497	198,966	130,542	77,907	3,080	36,318
1960	2,275	1,227	8,026	194,132	142,136	60,528	2,923	38,105
1961	2,804	1,443	10,993	223,807	154,701	70,331	3,664	39,398
1962	3,003	1,563	8,610	236,579	171,429	72,143	3,318	38,998
1963	2,697	1,902	11,478	239,839	142,871	60,288	3,233	39,709
1964	3,152	1,948	10,235	308,331	148,892	63,498	3,028	41,426
1965	6,110	1,888	14,807	312,578	191,523	76,552	3,132	40,324
1966	5,796	2,532	11,928	359,503	234,665	78,780	2,492	40,008
1967	6,031	1,747	11,154	383,332	240,685	74,218	2,476	41,821
1968	5,780	2,197	13,398	371,474	264,456	78,307	2,740	43,133

	Poultry	Eggs	Other Livestock and Products	Total Livestock and Products	Forest Products	Supplementary Payments +	Dairy Supplementary Payments	Deficiency Payments	Total Cash Income
1950	6,679	6,219	5,090	189,122	785	5,256			359,289
1951	10,839	9,156	5,200	208,061	793	4,235			454,526
1952	9,815	8,626	4,561	180,060	800	2,349			505,114
1953	10,663	11,483	4,490	190,510	807	559			478,991
1954	12,149	10,743	4,672	200,872	814	1,031			379,043
1955	9,447	12,113	5,254	196,964	821	5,776			362,708
1956	13,542	13,126	4,987	209,853	828	1,319			427,918
1957	13,317	12,505	5,200	241,203	836	905			434,456
1958	12,636	12,693	5,553	293,695	843	19,394			500,071
1959	12,961	11,671	5,978	278,457	850	7,128		497	485,898
1960	13,302	11,629	5,684	274,307	857	25,010		2,066	496,372
1961	15,402	11,277	6,505	301,278	725	8,233		446	534,489
1962	13,380	10,679	6,384	316,331	593	21,387		503	575,393
1963	16,584	10,065	7,429	280,179	461	6,895		1,149	528,523
1964	15,600	9,187	7,095	288,726	330	4,466		325	602,178
1965	16,395	10,140	9,589	347,655	198	3,967	1,704	2,064	668,166
1966	19,412	12,103	7,899	395,359	173	5,983	4,670	3,242	768,930
1967	18,974	11,092	8,242	397,508	149	1,898	9,586	3,020	795,493
1968	17,529	11,808	7,242	425,215	124	2,151	10,154	1,782	810,900

* Interim and final Canadian Wheat Board Payments for wheat, oats and barley are credited to the year in which they are received by farmers. Cash advance payments on farm-stored grain minus repayments by the farmer when his grain is delivered to the elevator. If total advance payments exceed repayments, the Net Cash Advance will be positive; if not the Advance will be negative.

+ Payments made under the provisions of the Prairie Farm Assistance Act, the Prairie Farm Income Plan and the Wheat Acreage Reduction programme.

Table 48

FARM OPERATING EXPENSES AND DEPRECIATION CHARGES

1946 - 1966

(thousands of dollars)

Year	Taxes	Gross Farm Rent	Hired Labour	Interest on Indebtedness	Total Machinery Expenses	Fertilizer and Lime	Other Crop Expenses	Feed
1946	9,602	20,869	18,037	7,146	34,769	686	4,489	11,565
1947	10,769	23,600	20,327	8,099	38,669	969	5,792	17,034
1948	12,560	23,800	20,419	8,752	46,927	1,294	5,345	20,118
1949	14,198	18,664	20,422	9,631	51,605	1,993	5,911	19,399
1950	14,822	20,756	22,975	11,027	59,080	2,409	5,705	18,452
1951	15,011	24,852	25,632	12,298	66,575	3,271	6,134	15,939
1952	15,969	25,719	26,437	13,151	72,238	2,991	6,361	13,102
1953	16,961	20,779	25,593	14,004	75,443	3,612	6,522	10,646
1954	17,479	14,383	23,776	14,256	72,738	3,000	6,704	11,682
1955	16,898	18,967	25,303	14,952	76,157	2,505	7,492	13,254
1956	17,566	20,322	26,996	14,763	80,581	2,851	9,137	13,650
1957	17,629	16,732	28,567	14,761	83,040	3,549	10,256	13,296
1958	17,847	19,738	30,261	15,371	84,988	4,565	11,049	16,037
1959	18,404	21,218	31,711	16,659	89,513	6,112	12,634	16,205
1960	19,662	24,146	33,377	17,994	90,098	6,942	12,888	15,159
1961	20,310	24,628	33,932	20,349	91,079	8,487	14,331	18,553
1962	20,994	26,101	33,860	22,964	94,132	10,588	13,939	26,739
1963	21,968	28,641	33,294	26,806	98,510	14,315	15,030	28,166
1964	23,366	28,309	33,445	32,466	101,766	20,243	16,286	31,525
1965	24,764	30,635	36,161	36,711	106,914	22,688	15,587	33,575
1966	25,804	37,394	36,808	41,894	114,890	26,568	17,482	37,358
1967	27,884	30,809	40,271	45,619	119,857	36,348	18,831	42,536
1968	30,633	34,425	42,191	48,812	125,738	41,540	19,863	44,323

	Other Livestock Expenses	Building Repairs	Electricity* and Telephone		Depreciation		Total Operating and Depreciation Charges
			Miscellaneous		Buildings	Machinery	
1946	1,465	2,962	85	5,506	5,491	17,964	140,636
1947	1,486	3,207	126	6,077	6,388	20,860	163,403
1948	1,387	4,010	180	6,371	7,805	25,117	184,085
1949	1,324	4,167	238	6,373	8,226	30,657	192,808
1950	1,277	4,416	328	6,437	8,461	36,928	213,073
1951	1,449	4,386	1,282	9,952	8,688	42,901	238,370
1952	1,646	4,721	1,627	10,395	8,901	46,230	249,488
1953	1,930	5,767	1,773	10,373	11,165	50,936	255,504
1954	2,113	4,739	2,069	10,349	10,269	53,629	247,186
1955	2,361	4,339	2,237	11,324	10,948	52,061	258,798
1956	2,552	5,285	2,628	11,855	11,664	51,266	271,116
1957	2,883	4,574	2,920	12,262	11,892	53,620	275,981
1958	3,125	5,222	3,294	13,274	13,564	55,732	294,067
1959	3,659	5,974	3,682	14,582	14,024	58,157	312,534
1960	3,822	6,396	4,111	14,049	15,410	61,018	325,072
1961	4,654	6,809	5,069	15,770	15,870	61,970	341,812
1962	4,579	8,041	5,729	17,007	16,838	64,533	366,044
1963	5,247	7,671	6,508	17,509	18,455	68,158	390,278
1964	5,604	8,287	7,223	19,663	20,711	73,888	422,782
1965	6,699	8,318	8,019	20,706	23,935	80,809	455,521
1966	7,818	9,373	8,898	21,407	26,510	89,184	501,388
1967	8,492	10,459	9,881	24,085	29,666	98,815	543,553
1968	9,503	11,388	10,468	24,552	32,191	107,457	583,084

* Electric power only prior to 1951.

Table 49
INCOME OF FARM OPERATORS FROM FARMING OPERATIONS - ALBERTA
1946 - 1966
(thousands of dollars)

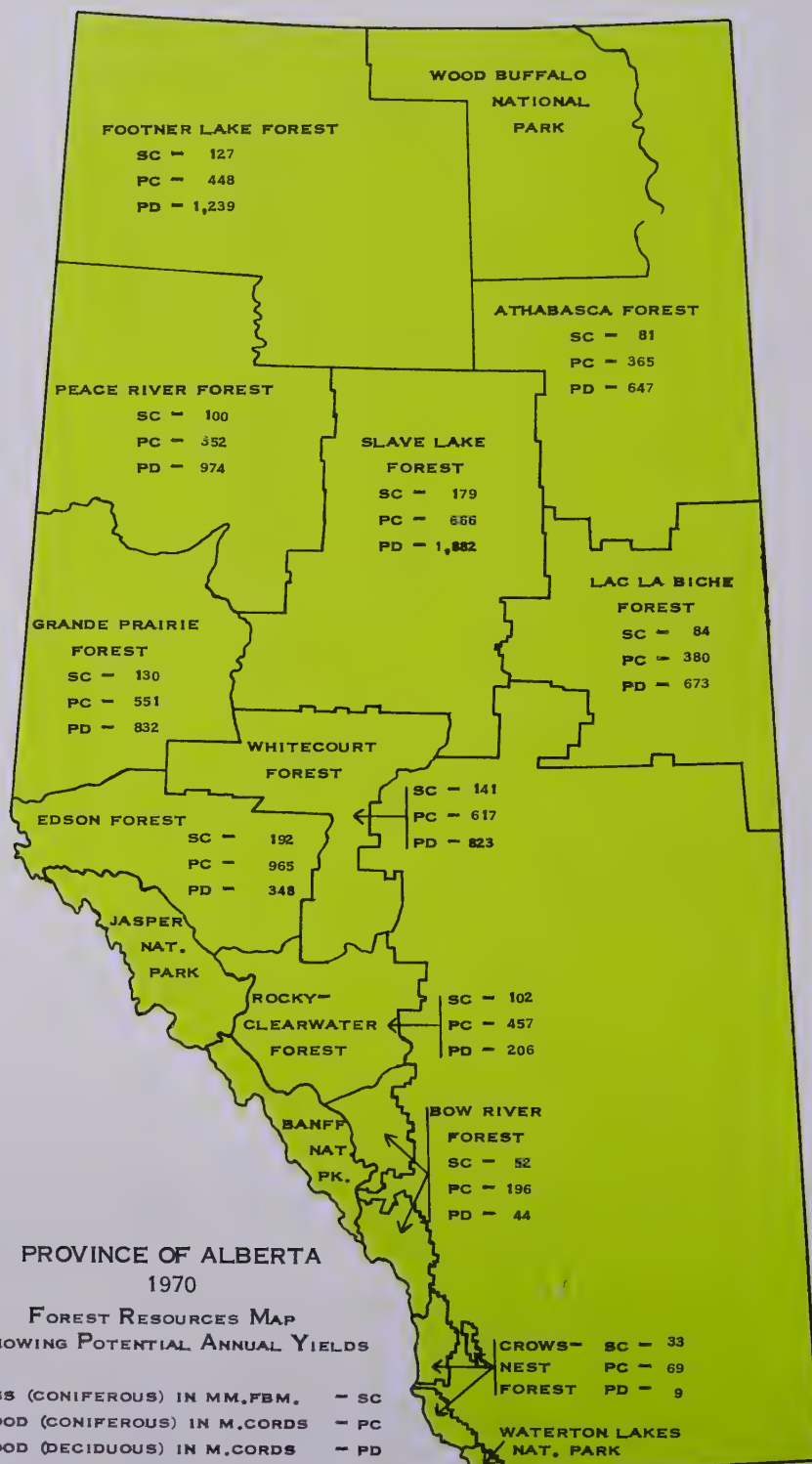
	1	2	3	4	5	6	7	8	9	10
	From Farm Products	Cash Income Supple- mentary Payments	Total	Income In Kind *	Realized Gross Income (1+2+4)	Operating & Depre- ciation Charges **	Realized Net Income (5-6)	Value of Inventory Change	Total Gross Income (5+8)	Total Net Income (9-6)
1946	283,270	4,458	287,728	31,032	318,760	140,636	178,124	15,792	334,552	193,916
1947	346,206	1,732	347,938	34,703	382,641	163,403	219,238	- 2,401	380,240	216,837
1948	440,534	3,533	444,067	39,804	483,871	184,085	299,786	- 6,674	477,197	293,112
1949	444,372	3,360	447,732	39,265	486,997	192,808	294,189	- 52,113	434,884	242,076
1950	354,033	5,256	359,289	39,113	398,402	213,073	185,329	7,462	405,864	192,791
1951	450,291	4,235	454,526	44,190	498,716	238,370	260,346	129,175	627,891	389,521
1952	502,765	2,349	505,114	42,967	548,081	249,488	298,593	55,998	604,079	354,591
1953	478,432	559	478,991	45,634	524,625	255,504	269,121	31,912	556,537	301,033
1954	378,012	1,031	379,043	42,107	421,150	247,186	173,964	5,864	427,014	179,828
1955	356,932	5,776	362,708	41,429	404,137	258,798	145,339	52,956	457,093	198,295
1956	426,599	1,319	427,918	42,153	470,071	271,116	198,955	44,044	514,115	242,999
1957	433,551	905	434,456	43,097	477,553	275,981	201,572	- 40,350	437,203	161,222
1958	480,677	19,394	500,071	47,206	547,277	294,067	253,210	- 6,432	540,845	246,778
1959	478,770	7,128	485,898	46,252	532,150	312,534	219,616	- 1,868	530,282	217,748
1960	471,362	25,010	496,372	49,278	545,650	325,070	220,578	- 21,190	524,460	199,388
1961	526,256	8,233	534,489	49,279	583,768	341,812	241,956	- 40,214	543,554	201,742
1962	554,006	21,387	575,393	50,788	626,181	366,044	260,137	21,174	647,355	281,311
1963	521,628	6,895	528,523	53,793	582,316	390,278	192,038	103,270	685,586	295,308
1964	597,712	4,466	602,178	57,601	659,779	422,782	236,997	7,895	667,674	244,892
1965	664,199	3,967	668,166	64,947	733,113	455,521	277,592	28,771	761,884	306,363
1966	762,947	5,983	768,930	69,789	838,719	501,388	337,331	50,616	889,335	387,947
1967	793,595	1,898	795,493	76,907	872,400	543,553	328,847	- 48,388	824,012	280,459
1968	808,749	2,151	810,900	87,372	898,272	583,084	315,188	66,536	964,808	381,724

* See Table

** See Table

Table 50
FARM INCOME IN KIND - ALBERTA
1946 - 1966
(thousands of dollars)

	Dairy Products	Poultry and Eggs	Meat	Fruit and Vegetables	Honey	Forest Products	Wool	House Rent	Total
1946	4,533	5,423	3,728	6,280	44	1,888	20	9,116	31,032
1947	5,725	5,234	4,549	6,721	50	1,840	27	10,557	34,703
1948	7,199	5,267	5,177	7,362	157	1,770	32	12,840	39,804
1949	6,198	5,540	4,691	7,621	61	1,655	25	13,474	39,265
1950	5,453	5,094	5,293	7,031	67	1,706	9	14,460	39,113
1951	5,996	7,445	6,355	7,429	29	1,621	5	15,310	44,190
1952	5,342	6,615	5,477	8,338	28	1,536	3	15,628	42,967
1953	5,097	6,621	5,171	6,800	26	1,451	5	20,463	45,634
1954	5,233	5,836	4,414	6,010	19	1,366	12	19,217	42,107
1955	5,387	5,389	3,460	5,668	25	1,281	17	20,202	41,429
1956	5,447	5,204	3,831	4,824	24	1,195	12	21,616	42,153
1957	5,382	4,557	5,330	4,356	27	1,110	7	22,328	43,097
1958	5,723	4,698	6,339	4,031	18	1,025	2	25,370	47,206
1959	5,488	3,987	5,531	3,823	18	940	5	26,460	46,252
1960	5,586	4,248	5,641	3,786	27	855	5	29,130	49,278
1961	5,457	4,191	5,867	3,542	19	758	3	29,942	49,279
1962	5,126	4,359	5,497	3,508	18	660	3	31,617	50,788
1963	5,121	4,157	5,577	3,527	25	563	3	34,820	53,793
1964	5,042	3,307	5,482	3,852	33	466	4	39,415	57,601
1965	4,570	3,631	5,917	4,703	32	369	2	45,723	64,947
1966	4,170	3,508	6,049	4,221	26	351	2	51,462	69,789
1967	4,271	3,041	5,731	4,564	32	332	1	58,935	76,907
1968	4,315	2,804	5,642	4,584	32	314	2	69,679	87,372



FORESTRY

The forests of Alberta cover almost 60 per cent of the total area of the province, or about 150,000 square miles. They contain in excess of 59 billion cubic feet of wood material. Alberta's forests rank fourth among the provinces both in terms of merchantable timber volume and productive area.

Forestry may be defined as the art, science and business of managing forest land for the continuous production of goods and services. In Alberta, the range of such goods and services of value to industry and the consumer is now considerable and definitely increasing. There is a growing realization by the public that the various categories of material goods such as water, forage, fish, wildlife, and wood are being produced at a regular and increasing rate of production in our forested area. At the same time there is also a steady increase in the appreciation of the non-material benefits of forests, such as recreational opportunities and scenery.

The forests of Alberta are a valuable renewable natural resource administered under a policy designed to ensure a sustained yield of diverse products. Growing forests for future use necessitates the expenditure of time and funds based upon overall intelligent long-range planning.

The Crown is the principal landowner in Alberta as shown in the table below.

The government in administering public lands considers itself a landlord; and, as a landlord, tries to obtain the greatest return from the land. Consequently, the government generally retains title to all its present land, mineral and forest rights. These rights in turn are leased under legislative authorization to private firms for planned natural resources development purposes. Leases, licenses and permits are subject to renewal and to special operating conditions. The main exception to the Crown policy of the retention of title to all public lands is in the gradual and orderly release of land suitable for agriculture.

Table 51 CROWN AND PRIVATE LAND DISPOSITION

		Square Miles	Per cent
Private land:		99,392	39
Crown land:			
(a) Federal (National Parks, Department of National Defence, etc.)	26,127	10	
(b) Provincial (Forestry, Provincial Parks, etc.)	129,766	51	
		155,893	61
		255,285	100

The major part of Alberta's forest land is in the Boreal forest region. The Subalpine and Montane forest regions are confined to the eastern slopes of the Rocky Mountains. The most common coniferous tree species in Alberta are white and black

spruce, and lodgepole and jack pine. Less common are balsam fir, alpine fir, and larch. Deciduous species such as trembling aspen, balsam poplar and white birch are also found throughout most of Alberta.

The 150,000 square miles of forested area has been classified as 63,000 timbered, a further 40,000 which will be suitable in time after the old and recently burned over areas are restocked, and about 47,000 of muskeg, bushland and generally unsuitable terrain.

Of the 63,000 square miles presently timbered, approximately 41 per cent are covered with coniferous trees, 27 per cent with deciduous trees, and 32 per cent with coniferous and deciduous intermixed.

Forest Management Units are areas reserved for the production in perpetuity of forest products. About 127,000 square miles of forest area are now subdivided into management units within the 11 forest administration regions as tabulated below:

The forests of Alberta represent not only a tangible source of income from wood production and domestic grazing but include many times the value of that income in the less tangible benefits derived from watershed management, from providing a habitat for wildlife, and from use as a recreational playground. As population increases so will the value of these benefits increase. Wise multiple and coordinated use-management, including intelligent long-range planning of the forest lands, ensures continuing benefits.

Table 52
TIMBER VOLUME BY SPECIES - ALBERTA

Species	Diameter Class (inches)	Volume (cu. ft.)	Per cent
Coniferous:			
Spruce, white	4 to 11	6.8 billion	11
Spruce, white	12 and over	9.5 billion	16
Pine, jack and lodgepole	4 to 10	10.4 billion	18
Pine, jack and lodgepole	11 and over	5.4 billion	9
Spruce, black	4 and over	2.5 billion	4
Fir, balsam	4 and over	1.2 billion	2
Deciduous:			
Poplar and birch	4 and over	23.4 billion	40
		59.2 billion	100

Table 53 ALBERTA FOREST MANAGEMENT UNITS

Forest	Area in Management Units (square miles)	Per cent of Total Area Management Units
Crowsnest	1,362	1
Bow River	3,307	3
Clearwater-Rocky	5,254	4
Edson	8,036	6
Whitecourt	7,441	6
Grande Prairie	7,150	6
Peace River	13,062	10
Footner Lake	28,534	22
Slave Lake	19,753	16
Lac La Biche	9,513	7
Athabasca	23,479	19
Total	126,891	100

Table 54
ANNUAL VOLUME OF FOREST PRODUCTION, ALBERTA
1959 - 1969

Product	Unit	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	10 Year Average
Lumber, all species	MM fbm.	386	243	288	314	381	319	309	290	272	365	317
Plywood logs, coniferous	MM fbm.	12	11	20	23	31	18	20	56	60	102	35
Plywood logs, deciduous	MM fbm.	14	8	13	14	22	11	13	12	4	4	11
Round timber, Poles, Piling Posts	MM lin. ft.	14	23	20	29	38	28	23	23	19	21	24
Pulpwood	M cords	258	327	271	283	300	390	379	379	244	316	315
Fuelwood	M cords	10	20	8	13	7	3	5	4	2	3	7
Railway Ties	M pieces	798	420	211	634	659	393	432	443	554	331	487
Total	M cu. ft.	104,869	81,560	85,315	95,363	112,103	105,114	101,628	104,747	91,176	115,407	99,728



Edmonton, Capital City of Alberta, reflects the dynamic growth of the province.



Peyto Lake, along the Banff-Jasper Highway, adds a tranquil touch to its turbulent surroundings.

The most significant post-war event in the forest products industry was the establishment in 1956 of the sulphate pulpmill at Hinton. Prior to that date, lumber manufacture accounted for some 85 per cent by volume of the total forest production of the province. With the increase in production of pulpwood, plywood and round timbers, lumber volume is now down to approximately 60 per cent.

Table 55

REFORESTATION, ALBERTA, 1959 - 1969

Year	Acres Scarified	Acres Seeded	Seed Collected lbs.	Acres Thinned	Seedlings Planted
1959-60	2,551	115	2,125	-	35,000
1960-61	5,964	1,145	3,851	-	24,000
1961-62	10,013	3,475	6,672	-	125,000
1962-63	10,688	7,900	1,540	-	173,000
1963-64	9,015	8,242	325	281	261,000
1964-65	10,478	6,770	4,361	1,005	325,000
1965-66	18,495	11,141	221	715	701,000
1966-67	17,902	13,001	444	600	876,000
1967-68	27,921	20,323	2,073	790	984,000
1968-69	17,294	9,099	7,835	2,241	1,646,000

Three additional pulpmill complexes will probably be established before 1980. Daily capacity of each is expected to be over 500 tons per day (basis of 2 cords per ton of pulp) with provision for doubling production with timber from optional pulpwood reserve areas. Two of these complexes have been announced; one for the Whitecourt area and one in the Grande Prairie area. One other attractive area being assessed at present is near Rocky Mountain House.

An interested firm may obtain authorization to examine any area reserved for pulpmilling. Such a firm must provide confirmation that it is financially able to construct and operate a pulpmill of at least 500 tons daily capacity. It is required regularly to submit to the Minister of the Department of Lands and Forests the results of its surveys and feasibility studies. It must outline proposals concerning the management, on a sustained yield basis, of the forest management area and also on the integration of diverse product lines to utilize the forest resource to the fullest economic extent. In the consideration of all pulp development briefs, the Minister of the Department of Lands and Forests next arranges for public hearings in each area. A Forest Management Agreement may then be negotiated, finally subject to the approval of the firm and the government.

Legislation now in effect authorized implementation of the timber quota system of management commencing May 1, 1966. Under this system, the volume of coniferous timber in a management unit is shared among qualified quota holders. The system provides for harvesting over 5 year periods while maintaining the balance between forest growth and depletion. Timber quotas have been established for most forest management units in the Province. The total annual harvestable coniferous timber quota volume now allocated in the eleven Forests amounts to some 390 million feet board

Table 56

FOREST PRODUCTION BY VOLUME AND VALUE, ALBERTA
1968 - 1969

Products	Unit	Volume	Product Value \$
Christmas Trees	No. trees	13,180	6,590
Fuelwood	cords	3,138	15,690
Lath	pieces	2,500,000	100,000
Lumber and Coniferous			
Plywood Logs	fbm.	466,983,210	34,089,774
Mine Ties	pieces	1,922	961
Pulpwood	cords	316,029	5,530,507
Plywood Logs - Poplar	fbm.	4,251,074	148,787
Railway Ties	pieces	331,132	678,821
Round Timber	cubic feet	1,959,822	862,322
Slabs	cords	186	372
Trees for Transplanting	No. trees	3,878	1,939
Total Value			41,435,763

measure and 19 million cubic feet for the production of lumber, plywood, round timbers, etc. Annual allowable cuts of 394,570 cords of pulpwood and 46.4 million board feet of lumber and plywood have also been established to date for the forest management areas of North Western Pulp and Power Ltd. and North Canadian Forest Industries Limited respectively. Timber quotas will be calculated for the remaining forest management units in the province as access into these units improves and present quota cuts are utilized.

In 1968, the deciduous timber allocation system legislation was passed. It has since enabled the allocation of some 13,000 acres annually in the Lesser Slave Lake region to provide some 80 million fbm. hardwood timber each year for plywood, lumber and other products. Additional deciduous timber allocation areas will be made available for competitive sale to industry as further demands arise.

With the implementation of the sustained yield policy in the forest management and timber quota areas, reforestation is an important responsibility which is delegated to the holders. Regeneration requirements have been set and surveys must be conducted on denuded forest lands. All areas found to be below the minimum stocking standards must be restocked within a short term.

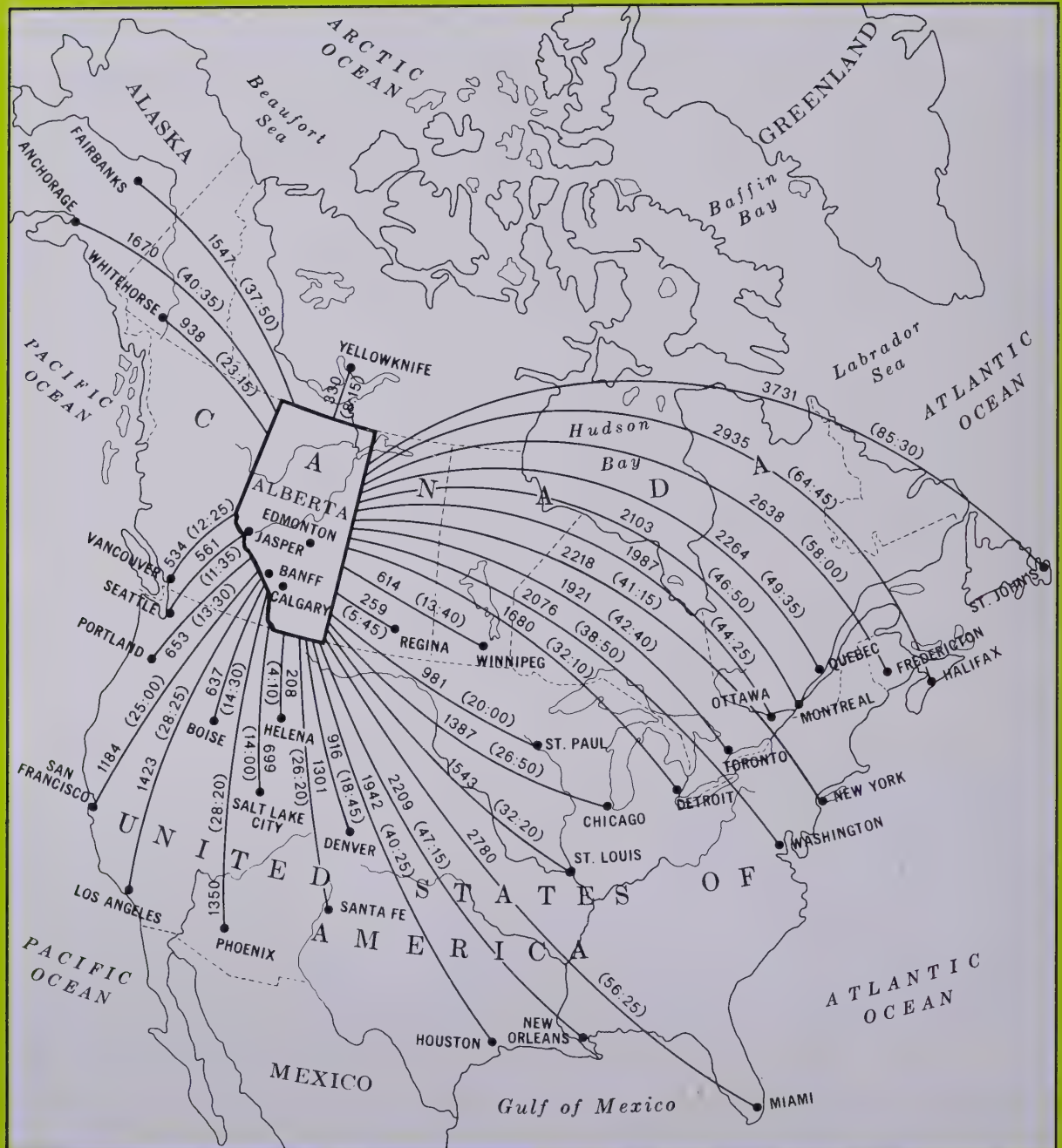
The basic requirement for sustained yield management is the protection of the basic resource by constant restocking to produce in perpetuity an equal or increasing volume of forest products. In comparison with the other provinces of Canada, Alberta in recent years has been very progressive in applying practical forest management through strict implementation of the sustained yield policy.



A massive steel truss bridge spans the Athabasca River at the approach to Fort McMurray.

MILEAGES AND AVERAGE DRIVING TIMES FROM PRINCIPAL CENTRES IN NORTH AMERICA TO THE ALBERTA BORDER

Average driving times are in brackets.



HIGHWAYS

The provincial and municipal governments have carried on an active program of road improvements. Table 57 shows the comparative mileage of various types of roads in Alberta in 1964 and 1968. During this period an additional 875 miles of roads and highways have been paved. This is an increase of 20 per cent.

Primary highways are the responsibility of the provincial government. They are the highways of provincial or national importance whose main function is to link major centres of population or traffic. Another function is to provide a certain level of access service to all areas of the province.

Since the highway network was established many years ago, emphasis has been placed on the upgrading and improvement of existing highways, with priority being given the heavy traffic routes. The improvements have taken the form of widening, decreasing grades, eliminating curves, and improving surfaces for better load-bearing characteristics. Additions, such as the new highway to Fort McMurray, have been made as the need arises. This program of improving the highway network by increasing traffic capacity and upgrading to new standards is a continuing one.

District roads are of regional or inter-regional importance. They connect rural areas and smaller centres to larger centres and to highways. Their main function is to provide rural areas with a good consistent level of rural access service. They are the administrative responsibility of local municipal governments. In the absence of a local government, (that is, in the Improvement Districts), responsibility for these roads rests with the Department of Highways.

The function of local roads is to provide access service for areas with very low traffic volumes. They, too, are the responsibility of the local municipal governments.

Access roads perform one of the functions of district roads in that they provide access from small urban centres to highways. Unlike the local roads, the Department of Highways accepts the responsibility for these access roads.

As a result of studies carried out in 1966 and 1967, the provincial government anticipates the initiation of a major long-term program of road construction and improvement in the rural areas to be carried out jointly by the provincial and municipal governments. Implementation of this program will bring about a change in the present system of classifying roads and highways. This change will be most notable in the present district road classification. The most important of these will become the proposed Secondary Road System. The remainder will be known as local roads. Changes will also be made in the present primary highways category.

Table 57

MILEAGE - HIGHWAYS AND ROADS, ALBERTA
1964 and 1968

	Un- improved miles	Graded miles	Gravelled miles	Pave- ment miles	Total miles
Primary Highways:					
1964	29	34	2,025	4,202	6,470
1968	-	-	1,861	4,776	6,637
District and Local Roads:					
1964	20,969	14,553	49,728	100	85,350
1968	19,136	12,353	55,595	355	87,439
Access Roads:					
1964	-	-	80	46	126
1968	-	-	67	92	159
Total:					
1964	20,998	14,587	52,013	4,348	91,946
1968	19,136	12,353	57,523	5,223	94,235

MOTOR VEHICLES

In 1964, 570,000 motor vehicles were registered in Alberta. By 1969 this figure reached 778,000 or 50 motor vehicles for every 100 persons.

Table 58 shows the distribution of motor vehicles within the province.

Other than those whose operations are limited strictly to urban areas, there were 166,950 trucks registered in the province in 1965. These trucks carried approximately 1,453 million net ton-miles of rural and inter-city cargo within the province, an average of 12,400 net ton-miles per truck. This average is heavily weighted downward by private inter-city and farm trucks.

The average net ton-miles of cargo carried by trucks operating for compensation was 120,500. The relatively large number of private inter-city and farm trucks travelled more miles but carried fewer tons.

In view of the general economic growth of the province and the program of improving and upgrading existing roads and highways, the volume of goods carried by truck transport between points in the province should continue to show increases.

No rate schedule governing truck freight charges has been imposed in Alberta. Competition among the various trucking firms is very keen.

Restrictions are imposed on length, gross weight, and per-axle weight, of vehicles. Any firm contemplating the use of truck transport for its supplies or products should determine the restrictions in force on regional roads and highways prior to plant site selection. These restrictions become important when a firm must ship over two or more different classes of roads. As the restrictions vary according to the class of road, the maximum allowable weight of each truckload is determined by the lowest class of road to be used.

Table 58

MOTOR VEHICLE REGISTRATIONS BY CENSUS DIVISIONS
ALBERTA, APRIL 1, 1968 - MARCH 31, 1969

	Passenger	Trucks	School Buses Trailers Motorcycles etc.	Total
Census Division 1	12,342	6,051	2,545	20,938
Medicine Hat	9,071	2,723	1,782	13,576
Census Division 2	25,913	14,342	5,644	45,899
Lethbridge	14,216	4,084	3,135	21,438
Census Division 3	7,585	6,083	1,841	15,509
Census Division 4	3,423	3,641	734	7,798
Census Division 5	9,722	8,984	2,514	21,220
Drumheller	2,085	987	439	3,511
Census Division 6	148,449	36,655	29,616	214,720
Calgary	136,222	26,793	27,357	190,372
Census Division 7	9,393	8,585	2,052	20,030
Census Division 8	25,762	13,370	5,473	44,605
Red Deer	9,753	2,749	2,263	14,765
Census Division 9	4,932	1,606	1,032	7,570
Census Division 10	19,903	14,494	3,650	38,047
Camrose	3,397	1,285	842	5,524
Lloydminster	1,737	1,031	537	3,305
Census Division 11	169,207	45,957	34,309	249,473
Edmonton	142,483	32,012	29,266	203,761
Wetaskiwin	2,692	1,239	536	4,467
Census Division 12	11,698	7,136	2,185	21,019
Census Division 13	9,619	8,904	1,894	20,417
Census Division 14	5,161	3,189	1,259	9,609
Census Division 15	18,938	17,582	4,517	41,037
Grande Prairie	4,044	1,945	1,182	7,171
Total Alberta	482,047	196,579	99,265	777,891

Detailed information can be obtained from the Highway Traffic Board, Department of Highways, Highways Building, Edmonton, Alberta.

Fuel consumption by the motor transport industry in 1964 was 83 million gallons of gasoline, 13.1 million gallons of diesel oil and 0.5 million gallons of other fuels. Average miles per gallon for trucks using gasoline was 8.8, diesel trucks 5.7 and those using other fuels 9.4.

"Piggyback" operations, whereby truck trailer units are carried by railways on inter-city routes, could reduce inter-city, for-hire truck movements drastically. The degree of utilization depends on many factors such as relative cost, scheduling of trains and availability of truck-tractors. These factors vary with individual trucking companies. Some firms may use their tractor units for local delivery only and use the piggyback service for the longer inter-city hauls. Other firms might use the railways during peak periods. Generally, the cost of hauling a trailer unit on the highways, or shipping such a unit on a railway flatcar, are comparable for the "for hire" trucking firms. The relative cost advantages to the individual trucking operator depend, in large part, on the condition of his equipment.

The scheduling of freight service will also affect the use of piggyback. If railway schedules are favourable to trucking firms, they may be more inclined to use the railways. If the schedule is unfavourable, they will utilize their own equipment.

Piggyback services can also be used as a means of transporting fully loaded units between two centres when such units exceed the maximum allowable weight on the roads and highways between the centres. In this way the full capacity of the trailer is used.

It is expected that the National Transport Act may strengthen the competitive position of trucking firms on short haul routes up to 300 miles and on relatively low volume freight traffic routes. The Act will make obligatory equal rail rates for piggyback service as between railway-owned trucking subsidiaries and independent trucking firms: this equalization is now voluntarily in effect. Federal rail subsidies are expected to be completely phased out by 1974. Exceptions may be made on uneconomical rail lines, retained as a matter of public policy.



High volatile coking bituminous coal is mined from foothills areas near Crowsnest.

RAILWAYS

Alberta is served by five railway companies, the Canadian National Railway, Canadian Pacific Railway, Northern Alberta Railway, the Alberta Resources Railway, and the Great Slave Lake Railway.

The Canadian National serves the cities of Edmonton, Drumheller, Camrose, Calgary, Red Deer and Lloydminster. Medicine Hat, Lethbridge, Edmonton, Calgary, Red Deer, Wetaskiwin, Lloydminster and Camrose are served by the Canadian Pacific Railway. Both the Canadian National, with its mainline running through Edmonton, and Canadian Pacific, with its mainline passing through Calgary, have major terminals at Montreal and Vancouver. The Canadian National also has a mainline terminating at Prince Rupert, British Columbia. These three centres are all ocean ports. As such, they provide an important link in the transportation of goods to world markets.

The Northern Alberta Railway, owned jointly by Canadian National and Canadian Pacific, provides service from Edmonton to Grande Prairie and Peace River in the northwest, and to Fort McMurray in the northeast.

The Alberta Resources Railway Corporation, a Crown corporation, was established in 1965. Its primary purpose is to accelerate the development of the important natural resources in the area between the Canadian National Railways mainline near Jasper and the Grande Prairie section of the central Peace River District. The resources in this area include coking coal, gypsum, pulpwood, petroleum, natural gas and sulphur, several of which are now being developed. The last spike was driven at official ceremonies marking the completion of the railway in the spring of 1969.

The Great Slave Lake Railway, linking Peace River and Pine Point, N.W.T., is in operation. This line, built by Canadian National with federal government assistance, will be an important factor in the economic development of the area through which it passes.

The structure of freight rates is of prime concern to firms operating in western Canada. Some may find the structure to their benefit others may find it a disadvantage. Special freight charges on raw materials and finished products can be negotiated with the railroads. Manufacturers would be well advised to negotiate their freight rates prior to initiating plant construction. At an early stage more favourable rates can often be arranged since at that time there is a possibility of the railway company losing an account to either competitive Canadian or U.S. railways, or to trucking interests.

In cities served by two or more railways, users may be required to pay inter-switching charges, the costs of the transfer of freight cars from a line of one railroad to that of another. No charges are levied for transfer to points within four track miles of the interchange point. Beyond this distance interswitching class rates, special switching rates or local rates apply. These charges are subject to negotiation and should be agreed on with the carrier before a final decision is made on plant location. For assistance and further information write to the Alberta Freight Bureau, Government of Alberta, Centennial Building.



Cattle drives are very much a part of every day life on the vast ranches of Alberta's foothills and plains.

AVIATION

Prior to 1921, flying activity in Alberta consisted mainly of aerial displays by barnstorming ex-World War I pilots at summer fairs and exhibitions. With the discovery in 1921 of oil at Fort Norman in the Northwest Territories, the airplane proved its value in northern operations by quickly transporting men and materials into areas that were not readily accessible otherwise. Commercial air transport then began to grow as companies were formed to haul freight, passengers, and mail. This was the beginning of the famed "bush pilot" era in Canadian aviation.

Increasing commercial air transport activity continued until the 1930's, the years of the Great Depression. During those years commercial flying remained relatively stagnant as economic activity slowed and government air mail contracts were cancelled except for the far north areas.

In 1939, emphasis shifted from commercial to military flying and pilot training. The province became a link in the ferrying of aircraft from the United States to Alaska and Russia. Training of air force recruits from many Allied nations took place at various stations in south and central Alberta. Air bases were constructed for pilot training at centres such as Bowden, Penhold, Claresholm, Vulcan, Namao (north of Edmonton), and Lincoln Park in Calgary. These bases were particularly suited for training because of the flat surrounding terrain and generally good flying weather.

Table 60

AIR MAIL AND CARGO, EDMONTON AND CALGARY
1963 - 1968
(thousands of pounds)

	Calgary International		Edmonton Industrial		Edmonton International	
	Mail	Cargo	Mail	Cargo	Mail	Cargo
1963	3,350	3,987	1,253	3,580	3,311	4,522
1964	3,282	4,558	1,377	4,844	5,115	4,687
1965	3,551	5,497	1,547	7,248	5,480	7,048
1966	3,376	8,005	1,736	5,531	3,874	8,488
1967	4,273	8,745	1,764	6,247	4,034	9,898
1968	4,419	11,522	1,958	6,058	4,800	13,518

With the development of more versatile and larger airplanes after the war, aviation has become an increasingly important part of the economy of Alberta, providing a vital transportation service for some of the more remote centres in Alberta and the north, and aiding in the exploitation of the province's natural resources.

Table 59
AIRCRAFT MOVEMENTS, SELECTED ALBERTA AIRPORTS
1962 - 1968

	1962	1964	1966	1968
Calgary International	117,121	140,133	206,088	231,423
Edmonton Industrial	146,292	142,191	190,272	202,178
Edmonton International	19,216	24,034	29,272	40,339
Lethbridge	21,850	28,404	43,596	53,286
Fort McMurray	3,186	4,483	4,743	7,111
Grande Prairie	5,161	6,500	12,606	33,893
Lac La Biche	387	477	827	1,497
Medicine Hat	4,376	10,361	8,440	9,246
Peace River	2,078	4,257	13,847	22,730
Red Deer				44,118

Table 61

AIRLINE PASSENGER TRAFFIC, EDMONTON AND CALGARY
1963 - 1968
(thousands of people)

	1963	1964	1965	1966	1967	1968
Calgary International	425	465	555	672	828	918
Edmonton Industrial	50	96	138	189	225	247
Edmonton International	319	300	357	393	472	522

There are 39 licensed airports and five licensed seaplane bases. In addition, there are a large number of unlicensed airports, varying from grass to well tarmacked landing fields.

Unless commercial operations are conducted, or it is used regularly on a scheduled run, an airport does not require a license from the Department of Transport. In either of such cases, the airport must conform to Department of Transport standards.

Three major domestic airlines, Air Canada, Canadian Pacific Airlines and Pacific Western Airlines serve the province with scheduled regional, national and international passenger and air freight service. In addition, two United States carriers, Western Airlines and West Coast Airlines, provide direct flights from Calgary to United States points.

In 1968 there were 37 locally based firms providing air charter services. These firms perform a variety of functions including aerial surveys, pipeline inspection and transportation of men and supplies. The versatility of the equipment used by these firms is enhanced through the use of pontoons and skis, enabling flights to be made to almost any area of the province at any season.



Mount Eisenhower, one of the best known landmarks along the Banff-Lake Louise Highway.

WATER TRANSPORT

Water transportation in Alberta is restricted by geography and economics to the Athabasca and Slave Rivers. These rivers provide a water route for freight from Fort McMurray to Hay River on Great Slave Lake, and along the MacKenzie River to Tuktoyaktuk on the coast of the Arctic Ocean, a total distance of approximately 1,700 miles. With the routes which branch out of the three principal lakes, Athabasca, Great Slave and Great Bear, there are an estimated 2,770 miles of navigable water.

The importance of water transport along this route had been declining in recent years. The main contributors to this decline were the completion of the all-weather MacKenzie Highway from Grimshaw to Yellowknife, N.W.T. and the Great Slave Lake Railway from Peace River to Pine Point, N.W.T. Other factors involved were the depressed market for uranium, hence the closure of some of the mine sites in the Beaverlodge area of Saskatchewan, and the completion of the Distant Early Warning (D.E.W.) Line sites.

The discovery of oil at Prudhoe Bay on the north shore of Alaska and the renewed oil exploration taking place in the Northwest Territories has resulted in a rather dramatic upswing in north-bound water transport.

Some of the reasons for this increase in water shipments are the low cost relative to other modes of transport, the length of the transportation season, 120 days, and the five foot draft of the tugs and barges which allows them to enter the shallow water of Prudhoe Bay. Deeper draft vessels are forced to anchor 7.5 miles away from the shore.

The federal government is instituting dredging operations along the MacKenzie River to ensure that it remains navigable even in years when the water level falls below normal.

Those in the industry forecast increasing demand for water transport for anywhere from five to fifteen years in the future. Should construction of the proposed crude oil pipeline from Prudhoe Bay to Chicago via Edmonton commence, or if a major oil field is found in the Canadian arctic this forecast would extend even further in the future.

Table 62
WATER FREIGHT MOVEMENTS
1960 - 1968

	McMurray tons	Hay River tons	Total tons
	Originating		
1960	85,077	39,202	124,279
1961	25,759	39,830	65,589
1962	62,235	37,176	99,411
1963	61,699	38,465	100,164
1964	60,748	47,883	108,631
1965	54,156	40,574	94,730
1966	43,280	33,334	76,614
1967	43,289	36,688	79,977
1968	51,615	64,372	115,987
	Terminating		
1960	16,650	18,946	35,596
1961	11,096	15,559	26,655
1962	13,941	22,115	36,056
1963	12,534	27,698	40,232
1964	13,604	22,076	35,680
1965	8,074	8,829	16,903
1966	11,541	8,753	20,294
1967	10,388	7,121	17,509
1968	11,773	5,028	16,801



The new Alberta Resources Railway has opened the door to new development in previously inaccessible foothills regions.



Lethbridge, in the south-eastern corner of the province is Alberta's third largest city with a population of 38,741.

COMMUNICATION MEDIA

Seven daily and over 90 weekly English-language, foreign-language and religious newspapers serve the residents of Alberta. The seven dailies have a circulation of approximately 330,000.

Of the 27 radio stations, 22 broadcast on the standard commercial frequencies. The remaining five are FM stations. Approximately 399,000 of 410,000 households have radios.

More than 370,000 households have television sets. They are served by eight television stations and 34 rebroadcast stations.

Over 649,000 telephones are in use. Of these, 431,000 are owned by the Alberta Government Telephone System, 28,000 by rural mutual companies and 190,000 by the City of Edmonton. The rural mutual telephone companies, farmer owned, are gradually being phased out and their operations taken over by the Alberta Government Telephone System as the \$60 million underground cable installation program progresses.

Teletypewriter exchange service is available from two companies: Alberta Government Telephones' TWX service and Canadian National - Canadian Pacific Telecommunications' TELEX service. Both systems provide teletypewriter exchange service throughout North America, with connections to Europe. TWX transmissions use the telephone communications system while TELEX is carried over the telegraph networks. There are over 2,600 subscribers to the TELEX network and 217 subscribers to the TWX system.

Radio-telephone terminals provide mobile telephone service throughout the populated areas of the province.

Telegraph service, operated by Canadian National-Canadian Pacific Telecommunications, is available in most centres.

The microwave network extends to most areas of the province. Part is owned by Alberta Government Telephones and part by Canadian Pacific-Canadian National Telecommunications. The portion owned by Alberta Government Telephones is part of the Trans-Canada Telephone System. The portion belonging to Canadian National-Canadian Pacific Telecommunications is part of a nationwide network.

PERSONAL INCOME

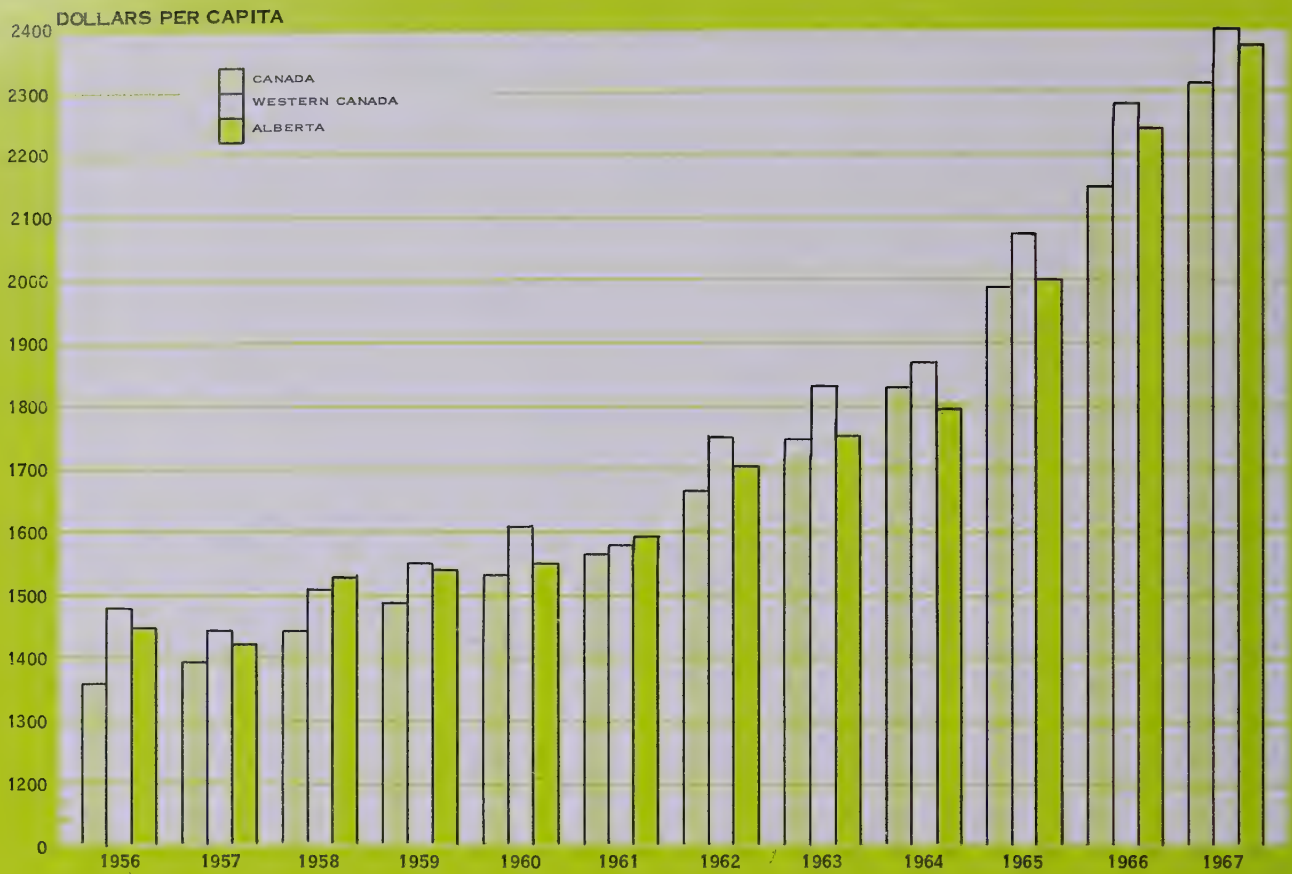
Personal income trends are considered to be relatively reliable indications of economic activity. Because personal income data has been compiled on a provincial basis for over 30 years, historical inter-provincial comparisons and growth patterns of individual provinces are readily available.

Included in personal income are all receipts of wages, salaries and supplementary labour income (excluding employer and employee contributions to social insurance and government pension funds); military pay and allowances; net income of non-farm unincorporated business; interest, dividends and net rental income of pensions; and transfer payments (excluding interest).

Since 1948, Alberta has ranked fourth among the provinces in total personal income per year. In 17 of those 20 years, the province has ranked third behind Ontario and British Columbia in per capita personal income. Total personal income has risen steadily, increasing five fold in the last 20 years, and doubling in the past decade. From 1958 to 1967, total personal income has risen from \$1.85 billion, at a cumulative annual growth rate of six per cent. During the same 10 year period, Alberta's population rose from 1,206,000 to 1,490,000 -- a cumulative growth rate of only 2.1 per cent. Had the two variables grown at the same rate, personal income per capita would have remained constant. In fact, personal income per capita has increased from \$1,534 to \$2,372 over the decade, a cumulative growth rate of 4.5 per cent. Part of this increase can be attributed to price increases. For example, using 1949 as a base year (1949=100), the consumer price index in Edmonton and Calgary has risen from 121.4 in 1958 to 143.1 in 1967, at a rate of 1.7 per year. Nevertheless, in real terms, per capita personal income has been rising, indicating a rising standard of living for Albertans.

While total personal income has increased steadily during the past 20 years, interesting trends in income distribution have developed. Between 1947 and 1956, wages, salaries, and supplementary labour income, as a percentage of total personal income, increased from 44 per cent to 62 per cent in 1967. During the same period, farm operators' proportion of net income decreased from 29 per cent of the total of 17 per cent during the first decade, and then decreased further to 10 per cent by 1967. Transfer payments have exhibited steady growth, in both dollar value and as a percentage of total personal income. In 1958 and 1967, the respective values were \$203 million or six per cent and \$450 million or 13.6 per cent.

The proportion of the total of personal income received through agriculture has diminished significantly in the past 20 years: yearly fluctuations in agriculture production now has a less severe impact on the provincial economy than in the past.



PER CAPITA PERSONAL INCOME: CANADA, WESTERN CANADA, ALBERTA, 1956 - 1967



COMPONENTS OF PERSONAL INCOME, ALBERTA, 1956-1967

Table 63

TOTAL PERSONAL INCOME AND PER CAPITA PERSONAL INCOME
CANADA, WESTERN CANADA AND ALBERTA, 1935 - 1967

	(millions of dollars)			Per Capita Personal Income		
	Total Personal Income			Western		
	Canada	Canada	Alberta	Canada	Canada	Alberta
				\$	\$	\$
1935	3,348	863	187	309	273	244
1940	4,914	1,305	310	432	403	392
1945	9,120	2,438	559	755	731	692
1950	13,428	3,779	919	979	1,028	1,007
1955	19,738	5,526	1,410	1,257	1,322	1,292
1956	21,885	6,362	1,635	1,361	1,485	1,456
1957	23,191	6,380	1,660	1,396	1,444	1,426
1958	24,675	6,866	1,850	1,445	1,511	1,534
1959	26,036	7,233	1,932	1,489	1,556	1,548
1960	27,435	7,655	2,006	1,535	1,612	1,554
1961	28,522	7,652	2,125	1,564	1,579	1,595
1962	30,972	8,676	2,333	1,668	1,750	1,703
1963	32,934	9,215	2,455	1,743	1,834	1,747
1964	35,153	9,568	2,571	1,828	1,870	1,795
1965	39,062	10,808	2,903	1,988	2,077	2,002
1966	43,063	12,080	3,278	2,152	2,280	2,241
1967	47,202	12,958	3,535	2,313	2,399	2,372

Table 64

COMPONENTS OF PERSONAL INCOME - ALBERTA, 1935 - 1967
(millions of dollars)

	Wages, Salaries and Supplementary Labour Income	Net Income Received by Farm Operators from Farm Production	Net Income of Non-Farm Unincorporated Business	Interest Dividends and Net Rental Income of Persons	Government Transfer Payments	Adjustments	Total
1935	110	27	22	17	12	- 1	187
1940	147	85	32	27	13	6	310
1945	244	124	60	43	40	48	559
1950	486	189	104	74	70	- 4	919
1955	839	197	135	122	118	- 1	1,410
1956	961	273	155	129	121	- 4	1,635
1957	1,029	181	162	137	152	- 1	1,660
1958	1,091	237	176	149	203	- 6	1,850
1959	1,167	228	181	171	199	- 14	1,932
1960	1,215	192	194	181	241	- 17	2,006
1961	1,279	224	194	200	243	- 15	2,125
1962	1,355	282	213	225	272	- 14	2,333
1963	1,424	309	217	241	280	- 16	2,455
1964	1,540	272	229	251	302	- 23	2,571
1965	1,737	331	242	268	346	- 21	2,903
1966	1,974	425	250	296	404	- 71	3,278
1967	2,185	358	270	320	480	- 78	3,535

CONSUMER MARKET DATA

Western Canada forms a natural market unit. It is isolated within economic boundaries imposed by the Pacific Ocean to the west, the American states to the south, and the Laurentian land bridge to the east. Within those boundaries are to be found 78 per cent of the agricultural land, over 50 per cent of the most highly productive forest land; and by far the bulk of the mineral resources of Canada. The 5.6 million people are slightly over a quarter of the Canadian total.

In 1967 Western Canadians received nearly \$13.0 billion or 27 per cent of the gross personal income of Canada. Per capita income at \$2,363 is above the Canadian figure of \$2,313.

Increases in income levels are characteristic of economic buoyancy. Personal disposable income (that is income after taxes) of Albertans increased from \$1.5 billion in 1957 to \$3.2 billion in 1967. On a per capita basis personal disposable income increased from \$1,314 in 1957 to \$2,147 in 1967 indicating a cumulative average annual growth of approximately five per cent. Labour income rose from \$986 million in 1957 to \$2.2 billion in 1967, a gain of 121 per cent.

Retail sales in 1966 for western Canada totalled \$6.2 billion, about 28 per cent that of Canada. On a per capita basis western Canadian sales were \$1,170 and Canadian \$1,105. Alberta retail sales were of the order \$1.8 billion in 1966 or \$1,230 per capita.

Service trade receipts for western Canada in 1966 totalled \$1.3 billion, approximately 27 per cent that of Canada. On a per capita basis western Canada receipts were \$239, and Canadian \$229. Alberta service trade receipts were of the order of \$351 million in 1966 or \$240 per capita.

The average income of taxable Albertans rose from \$4,107 in 1961 to \$5,408 in 1967, an increase of 31.7 per cent. Using 1961 as the base year, the consumer price index rose from 100 in 1961 to 115.4 in 1967. There has obviously been a rise in real income and in living standards.

Seventy per cent of the Alberta population now live in urban centres, 30 per cent in rural areas: 20 years ago the proportions were reversed. Sixty per cent live in the 10 cities. In absolute numbers rural population has been decreasing by around 30,000 per decade since 1941, and at an even faster rate in the five years ending in 1966. The province, in common with the other western provinces, is rapidly moving towards the urban in outlook and tastes.

Concurrent with change in the urban-rural balance has been change in the economic base of the province. At present, mining constitutes approximately 34 per cent of the net value of production in commodity-producing industries, construction 24 per cent, manufacturing 20 per cent and agriculture 19 per cent. Although the net value of production of the agriculture industry in Alberta is increasing, on a percentage basis the industry has decreased from over 50 per cent of the net value of production in commodity-producing industries in 1949 to less than 20 per cent in 1969. This has made for more stability in total incomes than two and three decades earlier when the local prosperity depended largely on the yields and prices of agricultural products. These changes in the economic base have given rise to major changes in demand patterns particularly for industrial and commercial equipment.

Annual public and private investment in capital stock in Alberta has risen from \$390 million in 1948 to \$2,434 million in 1969, a cumulative annual growth rate of over nine per cent. Over the latest five-year period the average annual rate of increase was 11.5 per cent.

The primary industries and construction sector had the largest numerical increase since 1949, due to the large increase in expenditures on agriculture and petroleum exploration and development. The largest relative increase since 1949 was in Trade, Finance and Commercial Services category, which includes wholesale, retail and automotive trade, banks, insurance companies, hotels, and theatres. Annual investment in this category increased 75 per cent since 1964. Over this latter period

Table 65

PUBLIC AND PRIVATE INVESTMENT IN ALBERTA, 1948 - 1969
(millions of dollars)

	Primary Industries and Construction	Manufacturing	Utilities	Trade, Finance and Commercial Services	Housing	Institutional Services and Government Departments	Total Capital Construction	and Repair Expenditures Machinery and Equipment	Total
1948	*	23.4	61.8	*	65.6	74.3	**	**	390.1
1949	164.8	20.6	79.2	25.9	91.1	88.0	280.5	189.1	469.6
1950	192.5	24.4	86.9	41.4	85.8	90.2	312.2	209.0	521.2
1951	234.1	45.1	97.1	54.7	77.9	125.9	379.1	255.7	634.8
1952	272.8	86.4	125.1	55.1	87.0	134.8	454.7	306.5	761.2
1953	269.0	104.1	130.0	72.1	123.0	198.9	569.5	327.6	897.1
1954	238.0	64.0	144.3	60.9	140.2	159.7	530.4	276.7	807.1
1955	308.2	78.0	143.6	59.9	140.1	188.3	636.0	282.1	918.1
1956	380.2	130.9	186.6	54.4	155.6	207.9	725.6	390.0	1,115.6
1957	336.0	82.7	210.3	64.6	154.0	223.1	707.2	363.5	1,070.7
1958	321.3	90.5	204.5	75.1	218.6	218.3	786.7	341.6	1,128.3
1959	381.5	100.1	190.5	83.5	216.8	244.2	818.7	397.9	1,216.6
1960	393.4	84.3	219.4	91.2	177.4	254.9	815.5	405.1	1,220.6
1961	443.8	56.9	242.6	79.5	195.3	251.8	876.6	393.3	1,269.9
1962	383.1	72.7	184.8	83.3	229.5	282.7	820.1	416.0	1,236.1
1963	462.1	64.8	216.7	101.2	221.8	243.6	862.0	448.2	1,310.2
1964	518.3	83.2	239.3	110.6	214.2	256.0	920.0	501.6	1,421.6
1965	644.1	105.6	283.4	119.2	215.2	296.8	1,093.5	570.8	1,664.3
1966	734.1	103.3	360.3	129.6	209.7	407.3	1,276.5	667.8	1,944.3
1967	746.7	113.4	393.6	149.2	244.6	446.6	1,347.9	746.2	2,094.1
1968	742.0	139.2	422.5	147.7	326.6	386.7	1,465.5	699.2	2,164.7
1969	835.9	135.1	472.6	193.6	358.4	438.7	1,612.0	822.3	2,434.3

* Figures included in total

** Figures not available

yearly expenditures on manufacturing (such as foods, chemicals, and non-metallic mineral products) were 38.4 per cent higher. Housing expenditures rose by 67.3 per cent. Investment in Government departments and institutional services, including churches, universities, schools and hospitals, increased 71.4 per cent. Investment in utilities, such as electric power, gas distribution, railway transport, telephones and water systems, almost doubled over the period.

Table 66

REPORTED PER CAPITA TAXABLE PLUS NON-TAXABLE
INCOME - ALBERTA, BY CENSUS DIVISION, 1957-1967

Census Division	1957 \$	1959 \$	1961 \$	1963 \$	1965 \$	1967 \$
1	1,036	1,167	1,096	1,012	1,318	1,776
2	972	1,059	1,056	1,093	1,251	1,655
3	517	683	710	868	998	1,317
4	1,032	883	832	932	1,251	1,386
5	687	921	903	1,055	1,219	1,589
6	1,479	1,541	1,495	1,539	1,801	2,308
7	595	744	722	855	1,033	1,281
8	657	798	926	988	1,088	1,354
9	936	1,076	1,208	1,121	1,402	1,789
10	472	491	623	697	792	1,105
11	1,317	1,362	1,379	1,457	1,646	2,032
12	321	351	387	421	564	860
13	410	477	478	632	707	861
14	1,040	843	985	969	1,191	1,337
15	448	510	585	675	745	1,067
Alberta Average	1,024	1,108	1,137	1,209	1,403	1,795

In 1967 the southern census divisions (divisions 1-8 inclusive) reported 51 per cent of the total although residing in them is only 47 per cent of the population. Divisions 6 and 11, in which are the cities of Calgary and Edmonton, reported 70 per cent of the total. The two cities reported two-thirds of total provincial income: their population is just over 51 per cent of the provincial total. The highest average per capita rural incomes were in census divisions 5 and 9 in 1967. In general per capita incomes are consistently higher in the southern than in the northern census divisions.

Table 67

TOTAL TAXABLE AND NON-TAXABLE INCOME BY CENSUS DIVISION, ALBERTA, 1957 - 1967
(figures in millions of dollars)

Census Division	1957	1958	1959	1960	1961	Change per Capita 1961 %	1962	1963	Change per Capita 1963 %	1964	1965	Change per Capita 1965 %	1966	1967	Change per Capita 1967 %
1	36.7	41.7	43.5	44.2	42.9	5.8	41.6	39.5	-13.3	47.7	51.3	20.3	62.5	68.9	75.5
2	74.5	80.4	84.7	87.1	88.0	8.6	93.6	90.8	3.2	98.8	103.6	18.5	116.7	136.7	51.4
3	15.8	21.1	21.0	23.9	22.0	37.3	26.3	26.4	27.1	26.0	29.8	40.6	35.3	38.6	51.7
4	14.9	13.6	13.0	10.7	12.5	-19.4	14.4	13.7	5.5	17.4	18.0	50.4	19.3	19.5	48.7
5	26.2	33.0	35.1	36.4	34.4	31.4	33.7	39.3	14.5	39.4	44.4	35.0	50.5	56.5	50.6
6	375.5	406.8	440.7	457.1	475.5	1.1	517.5	521.0	-0.1	588.4	646.4	20.5	759.7	875.4	50.0
7	24.0	27.7	30.2	27.0	29.5	21.3	33.7	34.9	14.9	42.6	42.2	43.1	46.9	52.3	49.8
8	43.8	51.6	57.1	63.9	70.9	40.9	76.0	78.5	23.8	83.1	89.7	17.5	112.3	115.6	37.0
9	16.7	17.9	20.5	22.3	24.5	29.1	21.8	21.8	4.2	24.0	26.1	16.1	27.4	31.8	59.6
10	33.6	35.8	34.7	41.8	43.7	32.0	46.0	48.9	42.0	54.2	55.6	27.1	73.8	77.6	58.5
11	448.9	479.8	512.0	523.9	566.2	4.7	599.0	636.6	7.0	679.6	762.0	19.4	874.5	994.1	39.5
12	14.6	15.6	16.3	17.6	18.3	20.6	22.4	20.5	20.0	24.0	28.2	45.7	37.3	44.1	104.3
13	18.5	19.8	21.6	20.3	21.7	16.6	26.8	28.4	32.5	28.9	31.4	47.9	36.3	37.8	36.2
14	17.2	15.9	15.1	16.8	19.0	-5.3	19.7	19.1	14.9	20.4	24.0	20.9	26.8	27.5	38.0
15	32.1	38.6	37.9	43.6	45.0	30.6	48.1	55.0	32.4	59.3	64.1	27.4	82.1	96.7	58.1
Total Alberta	1,192.8	1,299.2	1,383.3	1,436.5	1,514.0	11.0	1,620.6	1,674.4	9.1	1,833.7	2,016.5	23.4	2,361.4	2,673.1	48.5



Modern traffic facilities are becoming commonplace in both rural and urban systems as illustrated by this Trans-Canada Highway Interchange in Calgary.



The hydro-power development on the Brazeau River and others coupled with coal and natural gas resources makes Alberta the richest province in Canada in energy potential.

(thousands of dollars)

				Sources of Income				Farm or	Old Age		
				No. of	Wages and	Business	Professional	Commission	Fishing	Pension	Alimony
				Returns	Salaries	Income	Income	Income	Income	Income	
CALGARY											
1	1954	.....	61,090	184,720	13,709	4,961	4,163	762	550	-	
2	1955	.....	63,810	199,568	14,124	6,521	6,238	1,551	428	-	
3	1956	.....	69,514	222,893	15,579	7,339	7,769	2,425	665	-	
4	1957	.....	75,082	257,853	14,617	8,202	9,004	2,890	803	-	
5	1958	.....	79,083	286,677	13,177	8,722	7,213	2,475	1,185	-	
6	1959	.....	82,236	314,125	14,590	10,588	8,617	2,615	1,144	-	
7	1960	.....	83,907	327,416	15,093	11,473	5,557	2,307	1,263	-	
8	1961	.....	87,282	342,573	15,311	11,397	7,248	2,965	1,591	-	
9	1962	.....	95,744	393,458	15,811	13,835	7,308	3,330	1,921	-	
10	1963	.....	95,957	395,944	12,938	13,220	8,275	2,386	2,236	80	
11	1964	.....	104,001	442,219	16,658	15,718	10,847	3,872	3,124	492	
12	1965	.....	112,264	491,232	18,499	17,071	13,455	4,248	3,151	1,062	
13	1966	.....	125,266	578,254	22,746	19,227	15,794	4,789	3,583	1,058	
14	1967	.....	137,303	666,972	23,980	23,479	19,714	5,175	4,968	674	
EDMONTON											
15	1954	.....	77,450	226,831	14,617	6,737	4,642	573	432	-	
16	1955	.....	84,000	258,340	14,435	7,040	5,027	821	480	-	
17	1956	.....	91,081	293,960	17,094	9,696	7,540	1,311	495	-	
18	1957	.....	95,524	324,682	14,255	8,568	5,784	833	739	-	
19	1958	.....	96,215	331,187	19,466	12,368	7,927	1,038	914	-	
20	1959	.....	95,499	348,768	14,686	12,467	9,154	1,127	774	-	
21	1960	.....	97,257	357,324	12,262	12,732	8,131	723	999	-	
22	1961	.....	107,559	408,758	14,414	14,993	8,050	617	1,349	-	
23	1962	.....	114,077	443,753	15,306	15,626	8,664	1,980	1,639	-	
24	1963	.....	118,479	480,654	16,308	15,169	8,977	1,429	1,752	243	
25	1964	.....	124,493	509,424	17,270	18,852	9,778	1,552	2,514	278	
26	1965	.....	133,359	575,742	19,229	20,484	10,479	2,439	2,391	518	
27	1966	.....	151,566	679,052	21,124	22,898	16,508	3,520	3,017	988	
28	1967	.....	164,408	779,011	26,492	27,385	20,623	4,328	4,085	1,008	
LETHBRIDGE											
29	1954	.....	8,850	23,420	2,195	1,347	594	1,174	77	-	
30	1955	.....	9,090	24,470	2,576	528	756	1,115	92	-	
31	1956	.....	9,368	25,200	2,326	1,671	796	1,796	76	-	
32	1957	.....	10,249	29,169	2,927	1,174	839	1,975	135	-	
33	1958	.....	10,573	31,109	3,157	1,218	1,545	1,562	170	-	
34	1959	.....	10,732	33,584	3,477	1,621	796	1,777	276	-	
35	1960	.....	10,933	35,754	2,350	1,772	1,104	2,581	262	-	
36	1961	.....	10,940	35,368	2,601	1,896	815	2,802	255	-	
37	1962	.....	12,184	39,842	2,781	2,503	1,060	2,323	396	-	
38	1963	.....	12,074	42,413	2,475	1,783	597	2,464	264	-	
39	1964	.....	12,649	44,059	2,860	2,130	860	2,616	537	16	
40	1965	.....	13,000	46,356	2,427	2,376	1,130	3,345	412	72	
41	1966	.....	12,970	48,097	3,563	2,769	960	2,660	556	-	
42	1967	.....	14,660	58,000	3,667	3,033	2,304	3,589	704	42	
MEDICINE HAT											
43	1954	.....	4,730	11,932	1,277	570	119	960	53	-	
44	1955	.....	5,090	12,940	1,758	265	327	1,489	66	-	
45	1956	.....	6,011	15,601	1,860	411	111	2,147	30	-	
46	1957	.....	6,594	17,567	1,684	501	150	1,997	70	-	
47	1958	.....	5,942	17,395	1,049	388	415	1,896	57	-	
48	1959	.....	6,787	19,509	1,501	383	362	2,743	83	-	
49	1960	.....	7,496	23,257	1,999	575	282	2,116	97	-	
50	1961	.....	6,367	20,114	1,834	631	281	1,432	213	-	
51	1962	.....	6,903	23,319	970	595	467	989	163	-	
52	1963	.....	6,830	23,897	964	883	221	1,084	259	24	
53	1964	.....	7,870	26,348	2,052	757	408	1,792	435	22	
54	1965	.....	8,171	29,171	2,412	986	141	2,085	434	6	
55	1966	.....	8,682	31,135	2,415	723	524	3,600	383	86	
56	1967	.....	10,062	37,436	3,004	1,064	622	3,677	628	24	
RED DEER											
57	1961	.....	5,889	20,687	1,811	701	196	258	35	-	
58	1962	.....	7,536	25,204	1,632	831	339	1,028	224	-	
59	1963	.....	8,188	28,773	1,616	695	252	590	132	27	
60	1964	.....	8,319	30,283	2,203	1,027	766	1,142	152	8	
61	1965	.....	8,326	31,326	1,448	1,419	773	979	254	54	
62	1966	.....	9,739	40,374	1,870	1,182	762	1,423	192	127	
63	1967	.....	9,924	41,343	1,946	1,489	1,594	1,724	294	30	

SOURCES OF INCOME FOR MAJOR CITIES, ALBERTA
- 1967

(thousands of dollars)

Sources of Income								
Dividends	Bond & Bank Interest	Rental Income	Superannuation or Pension	Annuity Income	Estate Income	Mortgage Interest	Miscellaneous Income	Total Income Assessed
CALGARY								
4,823	1,694	3,255		139	1,360	688	1,153	221,977
7,462	1,992	2,404		189	1,250	935	1,008	243,670
4,975	2,044	4,637		240	1,495	796	1,096	271,953
6,191	2,463	4,048		230	977	607	1,294	309,179
5,204	3,584	5,086		244	1,678	1,129	2,586	338,960
6,893	3,944	4,411		321	906	1,483	2,442	372,078
6,475	4,371	3,300		258	1,426	1,244	2,202	382,384
6,452	5,254	3,514		263	1,484	1,641	3,857	403,548
7,904	7,372	2,624		448	2,021	1,894	2,360	460,284
7,091	7,778	1,647		376	1,681	1,894	3,059	458,604
9,510	9,785	1,499		570	2,203	1,778	5,758	524,035
10,752	10,347	1,030		464	2,409	1,552	2,952	578,222
11,912	12,767	2,412	7,287	328	2,101	2,128	5,468	689,852
14,044	13,679	3,542	8,904	563	1,923	1,914	6,109	795,640
EDMONTON								
3,874	1,645	2,332		164	748	659	1,478	264,732
3,585	1,344	2,900		173	600	713	1,805	297,263
4,160	1,818	2,735		176	657	1,067	949	341,658
6,053	2,443	3,535		99	800	1,343	1,127	370,261
5,331	2,583	2,659		173	917	1,991	1,314	387,868
5,056	3,370	3,051		322	669	2,187	1,650	403,280
4,840	3,919	2,792		324	981	1,888	1,788	408,702
5,846	5,223	2,879		210	1,593	1,980	2,198	468,110
6,620	6,696	2,510		106	1,080	2,019	1,981	507,981
6,345	6,774	2,191		208	1,443	1,716	2,574	545,783
7,860	8,834	2,084		317	1,398	2,266	3,385	585,811
8,766	10,803	1,437		229	1,905	1,806	2,291	657,919
8,722	11,673	2,393	7,430	262	1,765	1,855	3,312	784,518
9,918	14,237	977	6,950	664	2,087	2,230	3,212	903,205
LETHBRIDGE								
376	271	906		13	345	211	96	31,025
199	207	443		16	44	22	31	30,499
431	296	591		1	180	104	111	33,579
546	382	854		15	269	86	70	38,441
526	527	612		55	148	112	204	40,945
439	752	676		2	93	165	90	43,748
495	724	621		17	312	189	263	46,444
554	617	659		4	195	116	312	46,195
790	1,436	615		20	238	243	188	52,433
803	826	450		28	229	319	122	52,773
912	1,734	142		50	115	179	245	56,456
1,135	1,439	317		110	385	219	304	60,028
1,194	1,495	570	914	62	265	269	179	63,554
1,138	1,832	645	797	33	276	226	247	76,533
MEDICINE HAT								
119	128	164		8	-	61	10	15,401
94	127	252		1	72	55	25	17,471
188	135	160		20	14	97	49	20,823
191	132	301		15	27	78	122	22,835
179	319	390		40	34	147	133	22,442
238	262	266		14	1	116	18	25,496
155	276	216		9	33	75	131	29,221
429	577	82		24	54	135	139	25,945
185	547	128		7	23	238	24	27,654
422	398	137		29	110	134	47	28,607
631	966	194		34	3	170	127	33,939
543	1,007	19		21	140	268	130	37,364
464	1,057	252	685	5	126	235	146	41,835
700	1,389	251	500	8	211	237	250	50,001
RED DEER								
386	285	368		1	2	136	133	25,000
387	537	298		13	66	161	174	30,893
322	265	204		2	18	160	167	33,225
450	433	106		1	171	126	138	37,006
455	538	336		7	167	138	267	38,161
549	699	206	220	3	159	233	204	48,204
520	950	100	422	23	167	113	197	50,912

Table 69
AVERAGE INCOME OF TAXABLE PERSONS, BY OCCUPATIONAL CLASSES, ALBERTA*
1954 - 1967

Occupation	1954 \$	1956 \$	1958 \$	1960 \$	1962 \$	1964 \$	1965 \$	1966 \$	1967 \$
Farmers	3,296	3,775	4,396	4,309	4,661	5,063	5,275	5,444	5,770
Fishermen	-	3,864	-	-	-	4,200	5,600	3,900	5,048
Accountants	6,752	8,685	8,787	11,494	9,362	10,948	10,599	11,355	12,735
Medical Doctors and Surgeons	11,986	12,063	16,073	18,146	18,333	21,111	22,718	24,922	27,599
Dentists	9,327	11,905	11,526	13,038	16,898	16,826	16,690	17,166	20,614
Lawyers and Notaries	10,968	11,371	13,890	14,622	15,375	17,031	17,098	18,209	19,848
Engineers and Architects	-	11,027	12,017	10,000	10,459	11,382	14,557	18,462	18,056
Entertainers and Artists	-	-	-	3,280	6,170	4,293	4,020	3,984	3,709
Nurses	2,283	1,840	1,350	-	-	-	-	-	-
Other Professional	6,470	6,340	6,117	7,055	6,192	6,461	7,658	7,144	8,012
Agricultural Enterprises	2,027	1,870	2,092	-	-	-	-	-	-
Employees of Business	3,207	3,526	3,875	4,091	4,317	4,544	4,727	5,039	5,380
Employees of Institutions	2,227	2,402	2,596	2,809	3,012	3,146	3,329	3,514	3,693
Teachers and Professors	3,186	3,453	4,134	4,622	4,953	5,459	5,735	6,116	6,574
Federal Government Employees	3,030	3,138	3,468	3,858	4,014	4,551	4,923	5,331	5,473
Provincial Government Employees	2,872	3,099	3,488	3,902	3,981	4,191	4,385	4,808	5,101
Municipal and Smaller Government Employees	3,043	3,329	3,751	4,129	4,259	4,578	4,711	4,681	5,104
Unclassified	2,530	2,445	2,798	2,628	2,688	3,236	3,138	3,226	3,533
Salesmen	4,511	5,155	5,032	5,144	5,727	6,083	6,694	6,091	6,143
Forestry Operators	-	-	4,177	4,636	-	10,237	8,478	6,794	6,865
Manufacturers	5,158	6,154	6,667	6,761	5,560	5,374	5,353	6,402	6,151
Construction	4,841	5,476	5,364	5,100	4,897	4,886	5,178	5,887	6,162
Public Utilities	3,320	4,154	4,116	4,175	4,109	4,712	4,961	4,934	5,186
Wholesale Traders	6,947	9,326	7,679	6,904	7,501	6,741	6,961	7,660	7,347
Retail Traders	5,174	5,589	5,904	5,194	5,345	5,745	6,086	6,217	6,614
Service	3,724	4,046	4,419						
Recreation Services Operators				5,745	6,070	5,333	4,719	4,994	5,089
Business Services Operators				4,239	4,380	7,217	6,681	6,890	5,601
Other Service Operators				4,074	4,375	4,721	4,990	4,981	5,205
Finance	6,659	6,933	8,444						
Insurance Agencies				6,333	7,383	8,067	7,674	9,776	9,985
Real Estate				6,978	9,321	7,685	8,249	7,790	9,052
Other Finance				14,500	16,758	10,807	25,217	15,569	11,670
Other Business Operators	5,523	7,776	14,500	5,210	5,257	7,631	5,578	6,733	8,208
Investment Income Predominates	5,867	5,119	5,758	5,704	5,622	5,430	5,529	5,999	6,052
Pension Income Predominates	2,324	2,368	2,970	3,019	3,421	3,273	3,336	3,326	3,060
Property Owners	-	-	-	-	-	4,828	4,872	4,856	5,121
Estates	3,838	3,416	1,209	2,342	5,112	-	-	-	-
Unclassified	3,720	5,280	4,275	4,401	4,854	5,457	3,108	4,704	3,202
Average for All Classes	3,361	3,665	3,995	4,180	4,420	4,673	4,847	5,114	5,408

* Also includes Northwest Territories up to and including 1956

- Insufficient returns - included in total but not shown separately

Table 70

DECLARED PERSONAL INCOME, BY NUMBERS AND AGES OF TAXPAYERS, 1963 - 1967
(All money figures in thousands of dollars)

TAXABLE RETURNS										
1963			1964		1965		1966		1967	
	Number	Income	Number	Income	Number	Income	Number	Income	Number	Income
Under 21	20,026	42,327	21,947	48,478	27,738	63,886	36,511	86,678	41,036	104,222
21	9,810	25,015	10,778	29,611	11,123	30,911	12,268	37,499	16,480	54,273
22	8,511	24,941	9,370	28,507	12,724	40,408	12,985	43,575	13,674	50,150
23	8,683	26,858	10,635	35,457	10,280	34,778	13,972	52,087	13,542	53,260
24	7,889	26,565	11,110	39,991	10,622	40,593	12,259	49,325	14,553	63,303
25	8,893	32,748	8,115	30,239	9,536	40,475	10,573	44,129	12,739	58,370
26	8,207	32,094	9,369	37,413	9,328	39,641	10,258	47,173	11,540	55,762
27	7,806	31,997	8,038	34,018	9,166	40,390	11,587	56,089	11,086	56,395
28	8,324	35,601	8,960	39,157	9,140	43,178	9,558	46,413	10,891	57,794
29	8,176	35,715	9,118	41,547	10,119	47,798	8,077	43,076	9,944	55,403
30	8,091	36,481	7,771	37,030	8,551	45,335	9,076	50,970	9,628	55,964
31	8,362	40,471	8,339	42,039	9,371	46,864	9,484	53,204	10,924	62,600
32	8,486	42,248	8,473	44,773	8,300	44,192	9,429	53,802	9,865	59,911
33	8,691	44,401	8,076	42,875	9,361	49,279	9,447	56,082	9,669	60,193
34	8,001	41,274	8,097	42,814	8,748	51,288	9,723	57,244	9,946	63,571
35	8,954	44,997	7,273	41,146	9,759	54,650	9,921	60,795	10,438	64,608
36	8,141	41,276	8,155	43,367	8,390	48,375	10,422	61,823	11,258	75,228
37	8,465	44,540	8,937	49,510	8,419	47,225	9,400	60,957	10,181	68,144
38	7,429	40,254	6,748	36,486	8,343	50,419	8,995	56,665	10,870	71,047
39	7,876	39,748	8,191	42,855	8,174	44,802	9,484	58,447	10,082	68,519
40	7,085	39,370	9,141	50,270	8,431	47,403	9,453	58,458	10,375	68,297
41	7,390	38,035	8,098	42,817	7,568	43,712	8,490	51,545	9,431	63,186
42	8,128	42,682	8,656	44,919	7,398	42,161	9,071	56,064	9,840	64,778
43	7,270	37,343	8,191	44,240	8,553	47,314	8,878	55,373	10,204	65,582
44	5,675	29,995	7,216	40,903	8,655	48,554	9,188	55,446	9,456	61,781
45	6,327	34,494	6,609	37,323	7,873	45,265	9,347	55,249	9,377	59,692
46	5,755	30,705	6,091	32,519	6,598	41,040	9,105	55,701	10,344	62,860
47	5,753	30,753	5,949	35,097	7,593	41,217	7,911	48,622	8,711	55,269
48	5,368	28,960	5,871	33,072	6,135	35,966	7,669	46,817	7,667	50,410
49	6,327	33,676	5,400	29,851	6,720	36,306	7,573	47,290	7,978	50,105
50	5,317	26,572	5,284	27,582	6,059	35,489	7,222	42,497	7,930	50,622
51	5,462	27,731	5,873	31,596	6,256	36,671	6,834	41,187	7,654	48,458
52	4,717	24,861	5,725	30,184	5,823	31,375	6,796	40,185	7,563	48,678
53	4,635	23,933	5,760	29,178	5,937	32,676	6,789	39,058	7,678	47,677
54	4,756	23,510	4,743	24,345	4,907	25,950	6,558	37,716	6,843	43,123
55	4,235	21,622	4,377	23,166	5,520	29,950	5,869	32,382	6,865	41,984
56	4,292	21,984	4,749	24,747	5,566	31,254	6,146	33,596	6,311	37,233
57	4,065	19,199	5,068	24,633	4,729	24,915	5,426	31,640	5,835	34,590
58	4,037	19,729	3,989	20,516	3,966	20,717	6,125	34,011	5,424	32,720
59	3,482	16,091	4,316	22,203	4,307	22,553	5,616	30,813	5,673	34,584
60	3,599	18,135	3,193	16,715	3,811	19,686	4,875	25,750	5,290	30,674
61	2,747	12,428	3,251	17,113	3,554	19,401	4,455	24,172	4,533	27,015
62	2,621	12,061	3,529	17,020	3,652	19,670	4,438	22,105	4,350	23,673
63	2,972	14,444	2,409	12,231	3,030	16,043	3,708	19,302	4,000	21,722
64	2,077	10,025	2,421	11,346	2,900	13,916	3,299	17,813	4,143	22,053
65	2,166	9,244	1,573	8,290	3,101	15,340	2,133	10,580	3,066	16,881
66	1,372	6,846	1,646	7,689	1,871	10,665	2,617	13,844	2,006	11,100
67	1,290	5,644	1,382	7,026	1,428	6,965	1,879	9,544	2,602	14,532
68	990	4,764	1,479	7,107	1,458	7,179	1,739	8,394	2,932	13,156
69	1,016	4,321	1,276	6,218	733	3,930	2,397	9,957	2,348	10,445
70 and Over	9,958	42,723	13,167	58,049	12,829	58,823	13,723	64,762	15,537	71,733
Not Stated	20,093	90,564	17,255	82,418	14,106	65,438	6,709	31,133	664	3,699
TOTAL	339,798	1,531,995	361,187	1,687,693	388,259	1,882,029	435,467	2,227,036	470,976	2,547,029

Table 71

DISTRIBUTION OF INCOME CLASSES - ALBERTA, BY MAJOR CITIES, 1948 - 1967

Income Classes	By Number of Taxable Returns										By Number of Taxable Plus Non-Taxable Returns		
	1948	1951	1954	1957	1959	1960	1961	1962	1963	1964	1965	1966	1967
TOTAL ALBERTA													
Under - \$1,000	11,800	770	2,070	2,780	1,500	1,480	1,402	2,193	1,945	1,642	64,910	69,576	72,914
\$1,000 - 1,999	62,540	44,170	49,720	47,280	44,441	45,320	44,100	41,234	46,442	45,184	78,014	83,006	83,625
2,000 - 2,999	57,760	63,140	66,330	66,820	62,760	62,550	62,900	63,795	62,782	62,717	84,246	84,480	81,355
3,000 - 3,999	17,990	37,240	56,280	70,520	69,280	71,460	69,680	69,153	66,193	66,292	72,968	75,142	77,160
4,000 - 4,999	6,240	14,040	25,520	41,380	52,780	54,680	57,360	60,925	58,544	63,374	62,955	65,265	67,018
5,000 - 5,999	2,930	6,490	10,390	21,920	28,421	31,140	35,160	36,686	39,351	46,799	50,514	94,901	104,507
6,000 - 6,999	1,790	2,950	5,150	10,640	15,460	16,000	18,120	21,874	23,151	27,519			
7,000 - 7,999	1,030	1,950	2,430	5,582	7,920	9,121	10,620	12,098	13,322	16,073	71,543	54,329	67,761
8,000 - 8,999	810	1,320	1,510	3,500	5,060	5,260	5,520	7,068	8,065	9,814			
9,000 - 9,999	530	890	1,070	2,260	3,380	3,600	3,860	4,583	5,167	5,921	17,699	23,764	32,415
10,000 - 14,999	1,180	1,850	2,280	4,679	6,101	6,128	6,740	8,524	10,225	10,245			
Over - 15,000	910	1,380	1,990	1,241	1,824	1,841	2,163	2,828	2,434	2,833	3,100	4,018	5,270
Over - 20,000				1,277	666	736	855	1,009	1,060	1,335			
Over - 25,000					920	933	999	1,119	1,117	1,439			
CALGARY													
Under - \$1,000	2,300	130	550	760	460	420	381	461	494	301	15,338	15,587	17,175
\$1,000 - 1,999	16,020	11,460	12,320	10,980	9,680	10,520	10,300	10,209	12,120	11,277	18,235	19,210	19,885
2,000 - 2,999	14,430	17,030	17,640	16,800	16,560	16,300	16,700	17,102	16,581	16,847	20,430	19,067	19,945
3,000 - 3,999	4,010	9,340	15,220	19,020	18,060	17,800	18,200	18,330	18,051	18,038	18,806	19,655	20,320
4,000 - 4,999	1,350	3,220	7,290	11,620	14,780	14,900	16,040	18,406	17,001	17,850	18,644	17,945	18,079
5,000 - 5,999	630	1,570	2,880	6,300	8,441	8,740	9,840	10,753	11,390	14,791	14,199	28,803	31,520
6,000 - 6,999	460	720	1,540	2,720	4,920	5,340	5,480	7,217	6,740	8,228			
7,000 - 7,999	290	500	890	1,801	2,520	3,181	3,340	4,185	4,431	5,118	21,825	17,332	21,109
8,000 - 8,999	250	380	590	1,380	2,000	1,620	1,520	2,146	2,193	3,342			
9,000 - 9,999	170	280	390	1,000	1,200	1,220	1,380	1,588	1,815	2,175	6,292	8,020	11,588
10,000 - 14,999	350	620	920	1,756	2,318	2,431	2,422	3,115	3,272	3,716			
Over - 15,000	310	530	860	452	644	738	866	1,292	912	1,056	1,283	1,666	2,133
Over - 20,000				493	259	275	363	420	437	599			
Over - 25,000					394	422	450	520	520	663			
EDMONTON													
Under - \$1,000	3,230	400	830	1,280	480	520	621	990	531	740	18,788	19,485	19,499
\$1,000 - 1,999	19,160	14,730	16,850	15,900	13,900	13,540	13,640	13,025	15,160	14,779	20,682	25,685	25,747
2,000 - 2,999	15,290	19,550	22,250	22,480	19,520	20,200	21,280	21,818	21,570	21,276	25,574	25,955	24,947
3,000 - 3,999	4,480	11,190	19,370	23,120	21,720	23,000	23,420	24,093	22,561	22,740	23,823	24,653	25,663
4,000 - 4,999	1,350	4,330	9,220	14,580	17,200	16,660	19,660	20,581	21,341	21,961	20,838	22,077	22,983
5,000 - 5,999	690	1,990	3,670	7,980	8,820	9,820	12,180	13,265	13,450	16,673	18,020	33,464	37,430
6,000 - 6,999	320	860	1,980	3,920	5,140	5,020	6,200	7,643	8,630	9,886			
7,000 - 7,999	190	570	780	1,861	2,740	2,520	3,460	4,097	4,470	6,037	25,567	19,412	24,374
8,000 - 8,999	100	360	480	1,080	1,620	1,700	2,260	2,390	3,471	2,999			
9,000 - 9,999	100	200	380	600	980	1,240	1,100	1,527	1,531	2,017	6,357	8,719	11,510
10,000 - 14,999	270	410	870	1,675	2,068	1,899	2,291	2,988	4,127	3,414			
Over - 15,000	250	490	770	490	708	502	748	861	867	967	1,137	1,414	1,925
Over - 20,000				558	231	258	303	368	330	440			
Over - 25,000					372	378	396	431	440	564			
LETHBRIDGE													
Under - \$1,000	330	40	80	80	20	20	1,420	1,521	1,640	40	2,452	2,130	2,111
\$1,000 - 1,999	2,040	1,500	2,000	1,860	1,881	1,660	1,260	1,260	1,260	1,570	3,163	2,261	2,333
2,000 - 2,999	2,220	2,440	2,650	2,540	2,260	2,300	2,340	2,302	2,480	2,602	2,875	3,233	2,531
3,000 - 3,999	640	1,250	2,140	2,540	2,440	2,340	2,640	2,882	2,380	2,405	2,439	2,012	2,547
4,000 - 4,999	190	580	790	1,600	1,700	1,980	1,840	2,244	1,960	2,216	2,150	2,015	3,231
5,000 - 5,999	80	250	540	660	1,020	940	1,180	1,226	1,620	1,648	1,947	2,814	3,113
6,000 - 6,999	50	100	150	360	640	500	580	886	661	757			
7,000 - 7,999	30	70	130	160	180	420	300	262	420	445	1,840	1,184	1,782
8,000 - 8,999	40	40	100	160	160	140	80	204	200	269			
9,000 - 9,999	50	60	20	20	140	220	160	206	271	186	469	644	843
10,000 - 14,999	80	90	100	224	172	257	266	292	258	335			
Over - 15,000	40	70	140	54	65	90	66	88	99	101	108	147	204
Over - 20,000				51	26	32	32	40	32	40			
Over - 25,000					48	34	36	31	33	35			
MEDICINE HAT													
Under - \$1,000	330	10	20	20	20	100			40		781	1,578	1,449
\$1,000 - 1,999	1,490	1,010	1,150	1,440	1,200	1,000	1,000	920	840	1,220	1,731	1,517	1,721
2,000 - 2,999	1,280	1,390	1,520	1,740	1,520	1,580	1,260	1,700	1,360	1,222	1,973	1,908	1,787
3,000 - 3,999	450	690	1,070	1,480	1,660	2,080	1,500	1,561	1,560	1,586	1,382	1,574	1,378
4,000 - 4,999	170	280	460	980	1,120	1,260	1,080	1,086	1,380	1,627	1,528	1,411	1,876
5,000 - 5,999	70	180	270	500	660	640	760	785	740	907	868	1,997	2,035
6,000 - 6,999	10	10	120	220	320	400	280	224	280	546			
7,000 - 7,999	10			60	100	140	180	208	320	348	1,480	925	1,386
8,000 - 8,999	10	20		20	40	100	120	143	60	146			
9,000 - 9,999	20	10		20		60	40	64	40	24	244	346	482
10,000 - 14,999	20	50		72	99	78	95	148	114	136			
Over - 15,000	10	30		20	27	34	32	41	77	77	54	58	74
Over - 20,000				22	10	15	12	14	9	20			
Over - 25,000					11	9	8	9	10	11			
RED DEER													
Under - \$1,000							20		140	60	871	1,287	1,365
\$1,000 - 1,999							780		900	1,160	1,674	1,690	1,564
2,000 - 2,999							1,360		1,861	1,750	1,623	1,893	1,834
3,000 - 3,999							1,080		1,804	1,760	1,651	1,629	1,393
4,000 - 4,999							1,000		1,156	1,380	1,445	1,686	1,498
5,000 - 5,999							780		688	780	1,209	2,123	2,387
6,000 - 6,999							380		324	440			
7,000 - 7,999							60		143	300	361	1,234	1,229
8,000 - 8,999							140		246	100			
9,000 - 9,999							100		127	101	103	1,288	1,229
10,000 - 14,999							152		203	217			
Over - 15,000							40		41	34	333	425	578
Over - 20,000							8		15	18			
Over - 25,000							9		8	15	52	53	73

Table 72

NUMBER OF INCOME TAXPAYERS, AVERAGE INCOME AND TOTAL INCOME FOR ALBERTA CITIES ⁺
1957 - 1967

	Place of Residence	Position* In Order of Average Income	Number of Taxpayers No.	Average Income \$	Total Income Reported \$
1957	Calgary	9	75,082	4,118	309,200,000
	Edmonton	27	95,524	3,876	370,300,000
	Lethbridge	39	10,249	3,751	38,400,000
	Medicine Hat	60	6,594	3,463	22,800,000
1958	Calgary	5	79,083	4,286	339,100,000
	Edmonton	27	96,215	4,031	387,900,000
	Lethbridge	47	10,573	3,872	40,900,000
	Medicine Hat	58	5,942	3,777	22,400,000
1959	Calgary	3	82,236	4,525	372,100,000
	Edmonton	16	95,499	4,223	403,300,000
	Lethbridge	27	10,732	4,076	43,700,000
	Medicine Hat	54	6,787	3,757	25,500,000
1960	Calgary	7	83,907	4,557	382,400,000
	Edmonton	31	97,257	4,202	408,700,000
	Lethbridge	26	10,933	4,248	46,400,000
	Medicine Hat	53	7,496	3,898	29,200,000
1961	Calgary	9	87,282	4,623	403,500,000
	Edmonton	25	107,559	4,352	468,100,000
	Lethbridge	39	10,940	4,223	46,200,000
	Medicine Hat	49	6,367	4,075	25,900,000
1962	Calgary	7	95,744	4,807	460,300,000
	Edmonton	25	114,077	4,453	508,000,000
	Lethbridge	35	12,184	4,303	52,400,000
	Red Deer	49	7,536	4,099	30,900,000
1963	Calgary	14	95,957	4,779	458,600,000
	Edmonton	22	118,479	4,606	545,800,000
	Lethbridge	39	12,074	4,370	52,800,000
	Red Deer	61	8,188	4,057	33,200,000
1964	Calgary	13	104,001	5,039	524,000,000
	Edmonton	38	124,493	4,706	585,800,000
	Lethbridge	57	12,649	4,463	56,500,000
	Medicine Hat	72	7,870	4,312	33,900,000
	Red Deer	60	8,319	4,448	37,000,000
1965	Calgary	18	112,264	5,150	578,200,000
	Edmonton	37	133,359	4,933	657,900,000
	Lethbridge	59	13,000	4,617	60,000,000
	Medicine Hat	65	8,171	4,572	37,400,000
	Red Deer	62	8,326	4,583	38,200,000
1966	Calgary	17	125,266	5,507	689,900,000
	Edmonton	34	151,566	5,176	784,500,000
	Lethbridge	57	12,970	4,900	63,600,000
	Medicine Hat	65	8,682	4,818	41,900,000
	Red Deer	51	9,739	4,949	48,200,000
1967	Calgary	16	137,303	5,795	795,600,000
	Edmonton	33	164,408	5,494	903,200,000
	Lethbridge	56	14,660	5,221	76,500,000
	Medicine Hat	74	10,062	4,969	50,000,000
	Red Deer	60	9,924	5,130	50,900,000

* Indicates rating of specified Alberta cities compared with other Canadian cities, e. g. in 1959 Calgary taxpayers had the third highest average income in Canada.

+ Having more than 5,000 taxpayers to 1960, 6,200 taxpayers in 1961, 7,000 taxpayers 1962-1964.

Table 73

RETAIL TRADE - ALBERTA, 1952 - 1968
(millions of dollars)

	1952	1953	1954	1955	1956	1957	1958	1959	1960
Sales, Distribution by Groups									
Grocery and Combination Stores	116	124	138	143	160	180	202	222	232
%	12.3	12.6	14.1	13.6	13.4	14.5	15.3	15.8	16.3
Other Food and Beverage Stores	57	59	62	66	68	67	64	73	76
%	6.0	6.0	6.3	6.2	5.7	5.4	4.9	5.2	5.4
General Stores	60	58	54	51	54	54	58	57	57
%	6.4	5.9	5.5	4.8	4.5	4.3	4.4	4.0	4.0
Department Stores	96	103	103	114	128	138	153	160	162
%	10.2	10.4	10.5	10.8	10.8	11.1	11.6	11.4	11.4
Variety Stores	12	13	13	14	16	17	18	19	21
%	1.2	1.2	1.3	1.4	1.3	1.3	1.4	1.4	1.5
Motor Vehicle Dealers	212	214	185	214	246	255	242	274	248
%	22.5	21.6	18.9	20.3	20.7	20.4	18.4	19.5	17.4
Garages and Filling Stations	50	58	66	69	81	84	93	99	109
%	5.3	5.8	6.8	6.5	6.8	6.7	7.0	7.0	7.6
Men's Clothing Stores	15	16	15	19	20	19	19	19	19
%	1.6	1.6	1.5	1.7	1.7	1.5	1.4	1.3	1.4
Family Clothing Stores	13	14	14	15	17	19	18	16	18
%	1.3	1.4	1.4	1.4	1.4	1.6	1.4	1.2	1.3
Women's Clothing Stores	16	19	20	19	20	21	22	22	22
%	1.7	1.9	2.1	1.8	1.7	1.7	1.7	1.6	1.5
Shoe Stores	5	5	5	6	8	8	8	10	11
%	0.6	0.5	0.5	0.6	0.7	0.7	0.6	0.7	0.7
Hardware Stores	26	26	24	24	31	32	33	33	31
%	2.8	2.7	2.5	2.2	2.6	2.6	2.5	2.4	2.2
Lumber and Building Material Dealers	53	64	59	63	72	66	73	80	84
%	5.7	6.5	6.0	5.9	6.0	5.3	5.5	5.7	5.9
Furniture, Appliances, Radio Stores	29	30	34	43	42	47	54	54	47
%	3.1	3.1	3.4	4.1	3.6	3.8	4.1	3.8	3.3
Restaurants	42	42	40	41	48	51	56	55	60
%	4.5	4.2	4.1	3.9	4.1	4.1	4.2	3.9	4.2
Fuel Oil Dealers	1	1	1	1	1	2	5	5	6
%	0.1	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.4
Drug Stores	20	22	23	25	28	32	35	34	36
%	2.1	2.2	2.3	2.3	2.4	2.6	2.7	2.4	2.5
Jewellery Stores	8	8	6	7	8	9	9	10	10
%	0.9	0.8	0.6	0.7	0.7	0.7	0.7	0.7	0.7
Other Retail Stores	110	114	118	123	140	144	156	163	175
%	11.7	11.5	12.1	11.7	11.8	11.6	11.8	11.6	12.3
TOTAL RETAIL TRADE	941	990	980	1,057	1,188	1,245	1,318	1,405	1,424
	1961	1961*	1962	1963	1964	1965	1966	1967	1968
Grocery and Combination Stores	243	242	259	267	283	308	332	344	363
%	16.6	19.1	19.0	18.8	18.9	19.2	19.1	18.2	17.9
Other Food and Beverage Stores	77	33	35	36	32	36	38	37	40
%	5.2	2.6	2.5	2.5	2.1	2.2	2.2	2.0	2.0
General Merchandise Stores**								59	64
%								3.1	3.2
General Stores	60	60	63	66	71	71	76	92	98
%	4.1	4.7	4.6	4.6	4.7	4.5	4.4	4.9	4.8
Department Stores	169	169	176	183	197	206	224	236	270
%	11.5	13.2	12.9	12.9	13.1	12.8	12.9	12.5	13.3
Variety Stores	23	23	25	26	28	35	44	30	21
%	1.6	1.8	1.9	1.8	1.9	2.2	2.5	1.6	1.0
Motor Vehicle Dealers	251	251	281	299	310	345	364	378	413
%	17.1	19.7	20.6	21.0	20.6	21.6	21.0	20.1	20.4
Garages and Filling Stations	119	136	139	141	146	146	158	178	195
%	8.1	10.7	10.2	9.9	9.7	9.1	9.1	9.4	9.6
Men's Clothing Stores	17	17	17	18	20	22	23	24	25
%	1.1	1.3	1.2	1.2	1.3	1.4	1.3	1.3	1.2
Family Clothing Stores	20	20	15	16	17	17	18	20	21
%	1.4	1.6	1.1	1.1	1.1	1.0	1.0	1.1	1.0
Women's Clothing Stores	21	21	22	22	23	25	29	30	32
%	1.4	1.6	1.6	1.5	1.5	1.6	1.7	1.6	1.6
Shoe Stores	10	10	12	12	13	13	14	17	19
%	0.7	0.8	0.9	0.9	0.9	0.8	0.8	0.9	0.9
Hardware Stores	29	29	31	30	30	32	34	36	39
%	2.0	2.3	2.2	2.1	2.0	2.0	2.0	1.9	1.9
Lumber and Building Material Dealers	90	-	-	-	-	-	-	-	-
%	6.1	-	-	-	-	-	-	-	-
Furniture, Appliances, Radio Stores	41	37	37	40	42	41	45	48	52
%	2.8	2.9	2.7	2.9	2.8	2.6	2.6	2.5	2.6
Restaurants	62	-	-	-	-	-	-	-	-
%	4.2	-	-	-	-	-	-	-	-
Fuel Oil Dealers	7	7	8	8	9	11	10	8	9
%	0.5	0.6	0.6	0.6	0.6	0.7	0.6	0.4	0.5
Drug Stores	37	37	40	41	40	43	49	58	63
%	2.5	2.9	2.9	2.9	2.7	2.7	2.8	3.1	3.1
Jewellery Stores	10	10	11	14	15	16	18	20	21
%	0.7	0.8	0.8	1.0	1.0	1.0	1.0	1.1	1.0
Other Retail Stores	182	170	196	203	227	233	260	270	283
%	12.4	13.4	14.3	14.3	15.1	14.6	15.0	14.3	14.0
TOTAL RETAIL TRADE	1,468	1,272	1,367	1,422	1,503	1,600	1,736	1,885	2,028

Revised basis ** New category 1967, 1968

Table 74

RETAIL TRADE BY SELECTED BUSINESS GROUPS, CENSUS DIVISIONS, ALBERTA - 1966
(millions of dollars)

	Total All Stores			Food Group		General Merchandise Group		Automotive Group		Apparel and Accessories Group		Hardware and Home Furnishings Group		Other Retail Stores Group	
	Population	Sales	% of Total Sales %	Sales	% of Total Group Sales %	Sales	% of Total Group Sales %	Sales	% of Total Group Sales %	Sales	% of Total Group Sales %	Sales	% of Total Group Sales %	Sales	% of Total Group Sales %
Alberta	1,463,203	1,758.1	100.0	359.3	100.0	380.8	100.0	601.4	100.0	98.1	100.0	97.3	100.0	221.2	100.0
C.D. 1	38,858	47.6	2.7	9.5	2.6	8.2	2.2	17.3	2.9	3.2	3.2	3.5	3.6	5.9	2.7
C.D. 2	82,719	105.5	6.0	22.9	6.4	15.5	4.1	37.1	6.2	8.0	8.2	8.1	8.3	13.9	6.3
C.D. 3	29,592	25.5	1.4	5.9	1.6	3.8	1.0	9.8	1.6	1.3	1.3	2.1	2.1	2.6	1.2
C.D. 4	14,224	16.1	.9	2.8	0.8	2.5	0.6	7.5	1.3	0.9	0.9	1.0	1.1	1.4	0.6
C.D. 5	35,987	34.6	2.0	7.3	2.0	4.5	1.2	16.0	2.7	1.8	1.9	2.2	2.3	2.7	1.2
C.D. 6	369,140	492.4	28.0	102.3	28.5	125.3	32.9	146.4	24.3	26.7	27.2	24.5	25.1	67.1	30.4
C.D. 7	40,833	42.2	2.4	8.8	2.5	6.1	1.6	17.3	2.9	2.6	2.6	2.9	2.9	4.6	2.1
C.D. 8	83,912	96.7	5.5	16.5	4.6	17.1	4.5	39.8	6.6	5.3	5.4	6.2	6.4	11.7	5.3
C.D. 9	18,195	24.4	1.4	6.7	1.9	1.6	0.4	6.8	1.1	1.9	1.9	1.3	1.3	6.1	2.8
C.D. 10	70,211	75.5	4.3	11.8	3.3	14.4	3.8	33.8	5.6	4.0	4.1	5.2	5.4	6.3	2.8
C.D. 11	476,053	608.6	34.6	128.0	35.6	139.4	36.6	198.7	33.1	33.8	34.5	30.0	30.8	78.7	35.6
C.D. 12	50,635	43.4	2.5	8.5	2.4	11.8	3.1	14.1	2.3	2.0	2.1	2.3	2.3	4.8	2.1
C.D. 13	44,142	37.6	2.1	6.5	1.8	7.6	2.0	15.8	2.6	2.1	2.2	2.2	2.3	3.4	1.5
C.D. 14	20,358	22.7	1.3	5.6	1.5	3.1	0.8	9.2	1.5	0.9	0.9	1.5	1.5	2.4	1.1
C.D. 15	88,344	85.3	4.9	16.3	4.5	19.8	5.2	31.7	5.3	3.6	3.6	4.4	4.6	9.5	4.3

Table 75

SERVICE TRADE BY SELECTED BUSINESS GROUPS, CENSUS DIVISIONS, ALBERTA - 1966
(millions of dollars)

	Total All Business Groups			Amusement & Recreation Group		Business Services Group		Personal Services Group		Repair Services Group		Hotel, Tourist Camp & Restaurant Group		Miscellaneous Group	
	Population	Receipts	as % of Total Alberta Receipts %	Receipts	Receipts	Receipts	Receipts	Receipts	Receipts	Receipts	Receipts	Receipts	Receipts	Receipts	Receipts
Alberta	1,463,203	351.4	100.0	28.6	30.2	42.8	7.3	197.8	44.8						
C.D. 1	38,858	6.2	1.8	0.4	*	0.8	0.2	4.4	0.3						
C.D. 2	82,719	14.1	4.0	1.1	1.1	2.0	0.5	8.7	0.7						
C.D. 3	29,592	3.5	1.0	0.3	*	0.4	--	2.4	0.2						
C.D. 4	14,224	1.8	0.5	0.1	--	0.1	--	1.5	*						
C.D. 5	35,987	4.7	1.3	0.2	*	0.4	0.2	3.5	0.3						
C.D. 6	369,140	113.0	32.2	12.2	14.0	15.5	1.5	51.0	18.9						
C.D. 7	40,833	6.0	1.7	0.5	*	0.5	0.1	4.4	0.4						
C.D. 8	83,912	14.2	4.0	1.2	0.7	1.4	0.8	9.2	0.9						
C.D. 9	18,195	20.4	5.8	1.0	--	0.7	-	18.4	--						
C.D. 10	70,211	9.1	2.6	0.5	0.2	0.7	0.3	6.9	0.5						
C.D. 11	476,053	123.7	35.2	9.4	13.4	17.3	2.1	60.3	21.2						
C.D. 12	50,635	7.1	2.0	0.4	*	0.8	0.2	5.3	0.3						
C.D. 13	44,142	4.8	1.4	0.4	0.1	0.4	0.3	3.2	0.3						
C.D. 14	20,358	5.2	1.5	0.3	*	0.4	--	4.1	--						
C.D. 15	88,344	17.7	5.0	0.6	0.3	1.0	0.7	14.5	0.5						

* less than \$100,000 - nil or zero -- figures withheld to avoid disclosure of individual operations

Table 76

THE CONSUMER PRICE INDEX -- CANADA, 1914 - 1968
(1961 = 100)

Year	Index	Year	Index	Year	Index	Year	Index	Year	Index	Year	Index
1914	38.4	1923	58.2	1932	47.8	1941	53.9	1950	79.6	1959	97.9
1915	38.9	1924	57.3	1933	45.5	1942	56.4	1951	88.0	1960	99.1
1916	42.0	1925	57.7	1934	46.1	1943	57.4	1952	90.2	1961	100.0
1917	49.3	1926	58.7	1935	46.4	1944	57.7	1953	89.4	1962	101.2
1918	55.7	1927	57.7	1936	47.3	1945	58.0	1954	89.9	1963	103.0
1919	61.0	1928	58.0	1937	48.8	1946	60.0	1955	90.1	1964	104.8
1920	70.0	1929	58.7	1938	49.3	1947	65.6	1956	91.4	1965	107.4
1921	62.6	1930	58.3	1939	48.9	1948	75.1	1957	94.3	1966	111.4
1922	58.0	1931	52.6	1940	50.9	1949	77.4	1958	96.8	1967	115.4
										1968	120.1

Table 77

COMPONENT GROUP INDEXES OF THE CONSUMER PRICE INDEX -- CANADA, 1949 - 1968
(1961 = 100)

Year	Food	Housing	Clothing	Transportation	Health and Personal Care	Recreation and Reading	Tobacco and Alcohol	Year	Food	Housing	Clothing	Transportation	Health and Personal Care	Recreation and Reading	Tobacco and Alcohol
1949	80.6	75.1	88.9	71.1	64.4	68.4	86.0	1959	97.7	98.6	97.7	98.4	96.7	97.0	98.0
1950	82.7	78.2	88.6	75.0	65.6	69.8	88.3	1960	98.5	99.6	98.6	98.8	99.5	98.8	99.6
1951	94.4	85.4	97.6	80.4	71.5	75.1	95.9	1961	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1952	94.2	88.6	99.4	83.5	75.9	79.2	97.4	1962	101.8	101.2	100.9	98.9	102.0	100.8	101.3
1953	90.8	90.1	97.9	84.8	77.3	79.9	92.9	1963	105.1	102.3	103.4	98.9	104.6	102.2	101.5
1954	90.5	91.3	97.2	85.3	80.2	81.8	92.3	1964	106.8	103.9	106.0	101.0	108.0	103.9	103.4
1955	90.4	91.9	96.0	84.3	81.6	83.9	92.3	1965	109.6	105.8	107.9	104.8	113.0	105.6	105.1
1956	91.5	93.2	96.5	87.7	83.7	85.8	92.6	1966	116.6	108.7	112.0	107.3	116.5	108.6	107.6
1957	95.6	95.1	96.4	92.4	89.0	88.8	94.1	1967	118.1	113.4	117.6	111.8	122.5	114.1	110.3
1958	98.5	96.8	97.5	95.2	93.6	94.7	95.1	1968	122.0	118.6	121.1	114.7	127.4	119.7	120.4

Table 78

CONSUMER PRICE INDEXES FOR REGIONAL CITIES -- CANADA, 1949 - 1968
(1961 = 100)

Year	St. John's Nfld	Halifax	Saint John	Montreal	Ottawa	Toronto	Winnipeg	Saskatoon Regina	Edmonton Calgary	Vancouver
1949		77.8	76.8	77.3	76.8	76.2	78.4	79.7	80.0	77.3
1950		79.5	78.3	80.2	79.2	79.3	81.4	81.5	83.1	80.1
1951	87.7	87.2	87.6	89.8	88.6	88.0	89.9	89.1	90.8	88.3
1952	88.7	89.7	90.2	91.0	89.7	89.6	91.1	90.0	91.8	90.7
1953	87.6	88.1	88.6	89.9	88.3	89.0	89.7	90.2	91.2	89.7
1954	88.1	88.8	89.6	90.3	89.2	90.2	90.4	91.1	91.9	90.7
1955	89.3	89.3	90.4	90.4	90.0	90.5	90.9	91.4	91.7	91.1
1956	91.5	90.4	91.2	91.6	91.6	91.9	91.9	92.3	92.6	92.4
1957	93.7	93.2	94.2	94.2	94.6	95.4	94.1	95.0	95.0	94.7
1958	95.0	95.6	96.2	97.1	96.4	98.0	96.5	97.3	97.1	97.1
1959	97.9	96.0	98.1	98.1	97.5	98.2	97.0	98.2	98.4	98.8
1960	99.0	99.0	99.2	98.9	98.8	99.4	98.5	99.2	99.3	99.7
1961	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1962	100.8	101.3	100.9	101.2	101.2	100.9	101.3	101.7	101.0	100.3
1963	102.8	102.3	102.5	102.9	102.9	102.6	102.2	102.5	102.1	101.9
1964	103.9	102.7	103.5	104.5	104.5	104.3	103.8	103.5	102.6	102.6
1965	105.5	104.6	105.1	106.7	106.3	106.9	106.1	105.2	104.1	104.5
1966	108.0	107.4	107.8	109.9	110.4	111.6	109.3	108.3	107.5	107.0
1967	110.8	109.9	111.1	114.2	113.1	114.9	113.3	111.3	111.8	111.0
1968	115.9	114.2	115.1	117.7	118.4	119.3	118.2	115.8	116.7	115.1

Table 79

GENERAL WHOLESALE PRICE INDEX -- CANADA, 1929 - 1968
(1935 - 1939 = 100)

Year	Index	Year	Index	Year	Index	Year	Index	Year	Index	Year	Index
1929	124.6	1936	96.8	1943	127.9	1950	211.2	1957	227.4	1963	244.6
1930	112.0	1937	107.7	1944	130.6	1951	240.2	1958	227.8	1964	245.4
1931	94.0	1938	102.0	1945	132.1	1952	226.0	1959	230.6	1965	250.4
1932	86.9	1939	99.2	1946	138.9	1953	220.7	1960	230.9	1966	259.5
1933	87.4	1940	108.0	1947	163.3	1954	217.0	1961	233.3	1967	264.1
1934	93.4	1941	116.4	1948	193.4	1955	218.9	1962	240.0	1968	269.6
1935	94.4	1942	123.0	1949	198.3	1956	225.6				

Table 80

SELECTED PRICE INDICATORS - GENERAL WHOLESALE INDEX AND PRINCIPAL COMPONENTS -- CANADA, 1956 - 1968
(1935 - 1939 = 100)

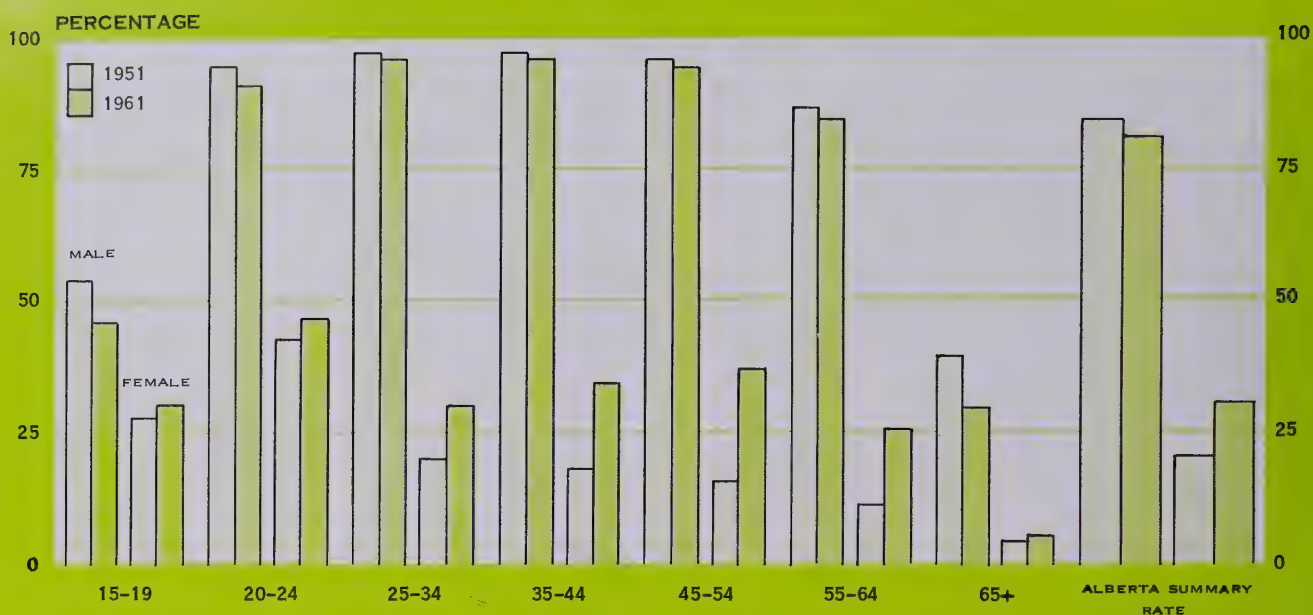
Year	General Wholesale Index	Vegetable Products	Animal Products	Textile Products	Wood Products	Iron Products	Non-Ferrous Metals Products	Minerals Products	Chemical Products
1956	225.6	197.3	227.7	230.2	303.7	239.8	199.2	180.8	180.1
1957	227.4	197.0	236.4	236.0	209.4	252.7	176.0	189.3	182.3
1958	227.8	198.1	250.7	229.0	298.5	252.6	167.3	186.5	185.0
1959	230.6	199.5	254.3	228.0	304.0	255.7	174.6	186.5	187.0
1960	233.3	203.0	247.6	229.6	303.8	256.2	177.8	185.6	188.2
1961	233.3	203.1	254.7	234.5	305.1	258.1	181.6	185.2	188.7
1962	240.0	211.6	262.5	241.2	315.8	256.2	192.1	189.1	190.5
1963	244.6	227.8	255.6	246.0	323.4	253.6	197.5	189.5	189.3
1964	245.4	223.3	250.8	248.4	330.9	256.4	205.9	190.9	191.2
1965	250.4	218.4	270.7	246.6	334.0	264.5	217.6	191.6	200.2
1966	259.5	225.9	296.2	251.5	337.8	268.0	229.9	193.7	207.1
1967	264.1	230.9	293.1	252.7	346.3	274.4	240.2	195.2	212.6
1968	269.6	230.6	294.7	256.3	366.3	276.9	250.8	205.7	214.1

Table 81
POPULATION, BIRTHS, MARRIAGES, DEATHS, AND RATES -- ALBERTA
1905 - 1967

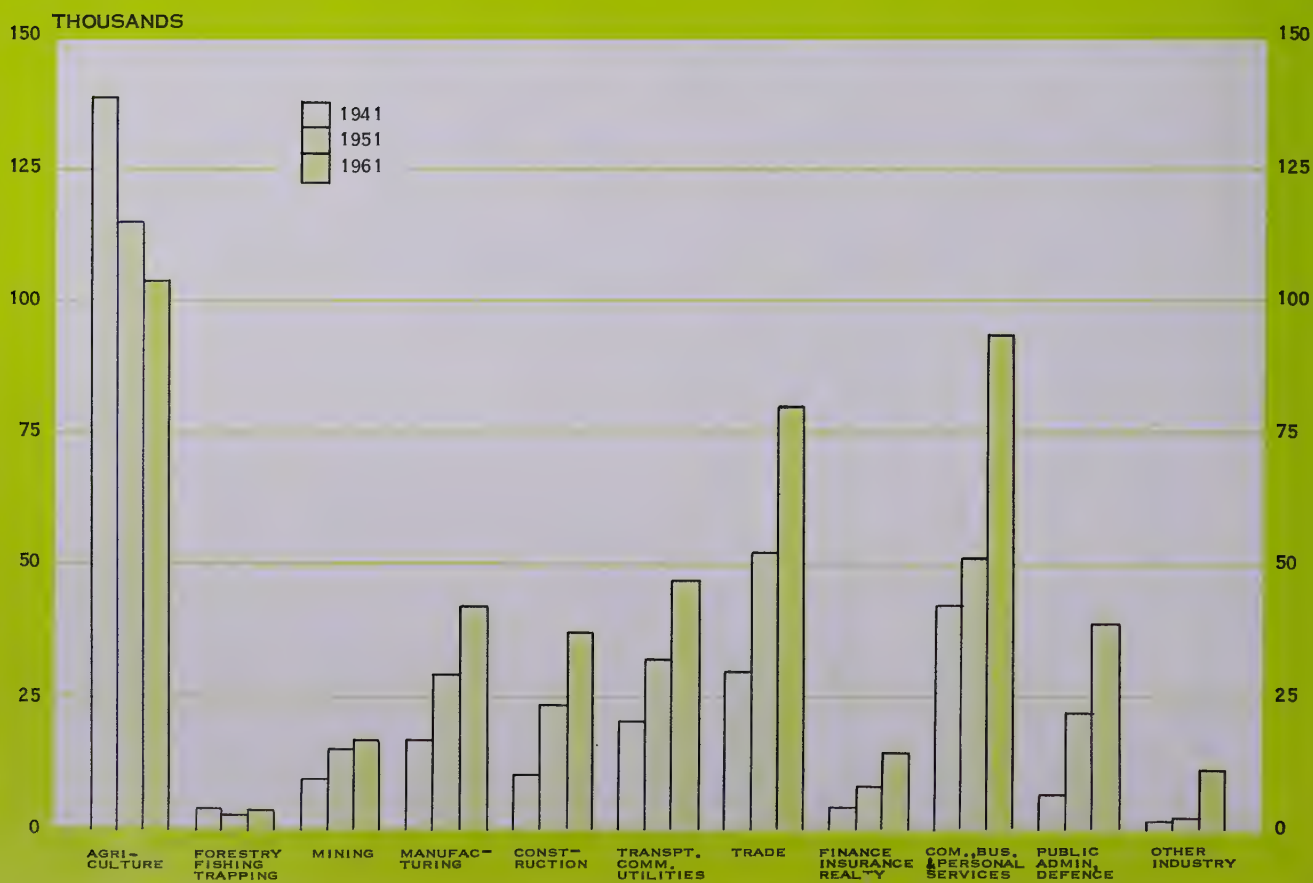
Year	Population	No. of Births*	Birth Rate Per 1,000 Population	No. of Marriages	Marriage Rate Per 1,000 Population	No. of Deaths*	Death Rate Per 1,000 Population	Infantile Death Rate Per 1,000 Live Births	Maternal Death Rate Per 1,000 Live Births	Rate of Natural Increase Per 1,000 Population
1905		421		187		114				
1906	185,000	3,003	16.2	927	5.0	1,091	5.9	90.0		10.3
1907	236,000	4,732	20.1	1,907	8.1	1,578	6.7	100.3	6.3	13.4
1908	286,000	5,973	22.5	2,032	7.6	2,188	8.2	126.6	6.0	14.3
1909	301,000	6,897	22.9	2,384	7.9	2,662	8.8			14.1
1910	336,000	8,321	24.8	3,086	9.2	3,526	10.5	129.5	8.6	14.3
1911	374,000	8,813	23.6	3,630	9.7	3,618	9.7	134.5	9.8	13.9
1912	400,000	10,284	25.7	4,429	11.1	4,232	10.6	124.8	8.3	15.1
1913	429,000	11,871	27.7	5,053	11.8	4,432	10.3	120.5	7.1	17.4
1914	459,000	13,685	29.8	4,623	10.1	4,417	9.6	100.5	6.1	20.2
1915	480,000	13,452	28.0	4,202	8.8	3,588	7.5	87.9	5.8	20.5
1916	496,000	13,331	26.9	4,230	8.5	4,058	8.2	90.5	7.2	18.7
1917	508,000	13,576	26.7	4,270	8.4	4,047	8.0	87.3	6.5	18.7
1918	522,000	14,890	28.5	4,048	7.8	7,924	15.2	107.1	5.5	13.3
1919	541,000	14,130	26.1	4,718	8.7	5,507	10.2	110.3	6.4	15.9
1920	565,000	16,565	29.3	5,110	9.0	5,675	10.0	93.7	8.3	19.3
1921	588,000	16,561	28.2	4,661	7.9	4,940	8.4	84.0	6.7	19.8
1922	592,000	16,163	27.3	4,272	7.2	5,264	8.9	91.3	6.9	18.4
1923	593,000	15,060	25.4	4,117	6.9	5,006	8.4	94.2	5.6	17.0
1924	597,000	14,597	24.5	4,159	7.0	4,858	8.1	84.1	6.2	16.4
1925	602,000	14,924	24.8	4,355	7.2	4,697	7.8	75.4	5.8	17.0
1926	608,000	14,456	23.8	4,503	7.4	5,159	8.5	85.3	5.9	15.3
1927	633,000	14,897	23.5	4,707	7.4	5,059	8.0	74.5	6.4	15.5
1928	658,000	15,692	23.8	5,776	8.8	5,699	8.7	76.5	6.8	15.1
1929	684,000	16,924	24.7	6,004	8.8	6,239	9.1	77.4	7.3	15.6
1930	708,000	17,649	24.9	5,334	7.5	5,496	7.8	63.6	6.5	17.1
1931	732,000	17,252	23.6	5,142	7.0	5,302	7.2	69.4	5.0	16.4
1932	740,000	16,990	23.0	5,054	6.8	5,521	7.5	58.7	3.8	15.5
1933	750,000	16,123	21.5	5,389	7.2	5,346	7.1	59.9	4.5	14.4
1934	758,000	16,236	21.4	6,053	8.0	5,337	7.0	54.9	5.0	14.4
1935	765,000	16,183	21.2	6,010	7.9	5,729	7.5	57.8	4.3	13.7
1936	773,000	15,786	20.4	6,020	7.8	6,147	8.0	59.5	5.8	12.4
1937	776,000	15,903	20.5	6,345	8.2	6,261	8.1	62.5	4.8	12.4
1938	781,000	15,891	20.3	6,973	8.9	5,871	7.5	51.1	4.3	12.8
1939	786,000	16,470	21.0	7,838	10.0	5,789	7.4	46.3	3.6	13.6
1940	790,000	17,359	22.0	8,782	11.1	6,203	7.9	48.0	4.0	14.1
1941	796,000	17,308	21.7	8,470	10.6	6,385	8.0	50.8	3.1	13.7
1942	776,000	18,317	23.6	9,034	11.6	6,091	7.8	38.0	2.3	15.8
1943	785,000	19,290	24.6	7,771	9.9	6,524	8.3	42.0	2.7	16.3
1944	808,000	19,372	24.0	7,299	9.0	6,320	7.8	45.9	1.6	16.2
1945	808,000	19,939	24.7	7,310	9.0	6,454	8.0	43.2	2.4	16.7
1946	803,000	22,184	27.6	9,478	11.8	6,601	8.2	42.6	1.4	19.4
1947	825,000	24,631	29.9	8,797	10.7	6,543	7.9	37.1	0.9	22.0
1948	854,000	24,075	28.2	8,844	10.4	6,987	8.2	38.6	1.2	20.0
1949	885,000	24,935	28.2	9,037	10.2	7,083	8.0	33.0	1.0	20.2
1950	913,000	25,625	28.1	9,294	10.2	6,856	7.5	32.4	0.7	20.6
1951	939,000	27,003	28.8	9,305	9.9	7,167	7.6	32.9	0.6	21.2
1952	973,000	29,105	29.9	9,514	9.8	7,345	7.5	30.2	0.5	22.4
1953	1,012,000	31,376	31.0	10,126	10.0	7,646	7.6	29.6	0.7	23.4
1954	1,057,000	33,593	31.8	9,960	9.4	7,520	7.1	26.3	0.3	24.7
1955	1,091,000	34,357	31.5	9,844	9.0	7,956	7.3	25.8	0.4	24.2
1956	1,123,000	34,951	31.1	9,965	8.9	7,786	6.9	24.6	0.4	24.2
1957	1,164,000	35,718	30.7	10,117	8.7	8,255	7.1	27.0	0.3	23.6
1958	1,206,000	36,842	30.5	10,186	8.4	8,237	6.8	25.0	0.5	23.7
1959	1,248,000	38,080	30.5	10,402	8.3	8,481	6.8	24.0	0.4	23.7
1960	1,291,000	39,009	30.2	10,482	8.1	8,888	6.9	26.0	0.2	23.3
1961	1,332,000	38,914	29.2	10,474	7.9	8,863	6.7	27.0	0.2	22.5
1962	1,370,000	38,804	28.3	10,423	7.6	9,264	6.8	25.0	0.4	21.5
1963	1,405,000	38,467	27.4	10,163	7.2	9,444	6.7	23.6	0.3	20.7
1964	1,432,000	36,173	25.3	10,634	7.4	9,482	6.6	23.9	0.2	18.7
1965	1,451,000	32,664	22.5	11,029	7.6	9,534	6.6	24.0	0.1	15.9
1966	1,463,000	30,592	20.9	11,879	8.1	9,677	6.6	20.9	0.2	14.3
1967**	1,490,000	30,691	20.6	12,903	8.7	9,523	6.4	20.0	0.2	14.2

* Exclusive of Stillbirths

** Preliminary



LABOUR FORCE : MALE AND FEMALE PARTICIPATION RATES, BY AGE GROUPS, ALBERTA - 1951 AND 1961



LABOUR FORCE BY INDUSTRY DIVISIONS, ALBERTA - 1941, 1951 AND 1961

LABOUR

Co-operation between management and labour is requisite to industrial harmony. To promote harmony it has been government practice in Alberta to discuss beforehand with labour, management and interested public bodies all changes or amendments either in the Labour Act or in the orders and regulations issued pursuant to the Act. Consequently, labour legislation in Alberta represents a consensus of the interested and affected groups, and is conducive to the maintenance of industrial peace.

The Alberta Labour Act consists of six sections relating to hours of work, minimum wages, vacations with pay, industrial standards, conciliation and arbitration, and equal pay. The seventh, a general section, relates to administration. The Act applies to all employers and employees, with the exception of municipal constables, farm labourers and domestic servants in private homes, and their employers. In practice the Board of Industrial Relations administers the Act.

Alberta's record of industrial peace is an indication of the soundness of the Alberta Labour Act and of its acceptance by employers, employees, and the public. According to the federal Department of Labour records, covering a period of many years, the proportion of man-days lost through work stoppages in relation to total man-days worked is lower in Alberta than in any other province. In the time period 1952-1967 inclusive there have been only 89 legal strikes in Alberta: illegal work stoppages, except for minor incidents, are almost unknown.

There is little doubt that this history of industrial peace is an encouraging factor, influencing potential investors.

By studying the union table to the right which is derived from Canada Department of Labour records, it is possible to gain an indication of the penetration of unions into the Alberta industrial community and labour force over the last twenty-five years. Since some of the union locals do not report regularly, the membership data in the table shown are not strictly comparable from year to year.

The following table indicates Alberta 1969 hourly wage rates for certain types of jobs in industrial construction. Current salary and wage rates for a wider range of jobs, and information pertaining to working conditions and benefits, as well as fringe benefit cost data, by industry, may be obtained on request from the Alberta Bureau of Statistics.

Table 82

UNIONS AND MEMBERSHIP REPORTED, ALBERTA, SPECIFIED YEARS, 1943 - 1968

	Union Locals No.	Locals Reporting No.	Members Reported No.
1943	299	284	28,975
1946	315	289	33,662
1949	360	331	41,550
1952	373	337	44,450
1955	411	362	52,500
1958	414	384	62,289
1961	404	367	60,500
1964	411	399	62,600
1966	391	385	68,873
1967	462	452	78,416
1968	485	471	82,434

Table 83

HOURLY WAGE RATE FOR SPECIFIED JOBS IN INDUSTRIAL CONSTRUCTION, ALBERTA, 1969

	Calgary and Zone \$	Edmonton and Zone \$	Lethbridge \$	Medicine Hat and Suffield \$	Red Deer and Penhold \$	Other Points \$
Boilermakers (on construction, erection and repair)	4.20	4.20	4.20	4.20	4.20	4.20
Bricklayers and Stonemasons	4.20	4.20	4.00	4.20	4.20	4.00
Carpenters and Joiners	4.20	4.20	4.00	4.00	4.00	4.00
Electricians (inside wiremen)	4.55	4.55	4.35	3.60	3.95	3.60
Grader Operators (industrial)	3.80	3.65	3.80	3.80	3.80	3.65
Insulation Mechanics (heat and frost units)	3.85	3.85	3.85	3.85	3.85	3.85
Labourers	3.25	3.25	2.70	2.20	3.25	2.20
Lathers (wood, wire or metal, etc.)	4.20	4.15	4.20	4.20	4.15	4.15
Linoleum Layers	3.70	3.40	3.70	3.70	3.70	3.40
Oilers (industrial and commercial)	3.55	3.35	3.55	3.55	3.55	3.35
Operators (draglines, clam shovels and pile drivers)	3.80	3.65	3.80	3.80	3.80	3.65
Painters (brush)	3.30	3.50	3.05	3.30	3.30	3.05
Painters (spray)	3.50	3.80	3.20	3.50	3.50	3.20
Pipelayers (caulkers and solderers)	3.45	3.55	2.90	2.20	3.55	2.20
Plasterers	4.15	4.15	4.15	4.15	4.15	4.15
Plumbers and Steamfitters	4.70	4.60	3.85	4.10	4.50	3.85
Riggers (general)	4.45	4.45	4.45	4.45	4.45	4.45
Rodmen (reinforcing)	3.83	3.85	3.83	3.83	3.83	3.83
Roofers (built-up)	3.65	3.65	3.65	3.65	3.65	3.65
Sheet Metal Workers	4.55	4.55	4.10	4.15	4.50	4.10
Structural Steel Erectors	4.45	4.45	4.45	4.45	4.45	4.45
Tractor Operators (large)	3.35	3.35	3.35	3.35	3.35	3.35
Truck Drivers	3.35	3.35	2.80	2.20	3.35	2.20
Welders and Burners (acetylene or electric)	4.45	4.10	4.45	4.45	4.45	4.10
Welders and Burners (steel erection)	4.45	4.45	4.45	4.45	4.45	4.45

The table below gives an indication of the size and broad industrial breakdown of Alberta's labour force. Figures from 1911 to 1961 are based on census data. The figures for 1941, 1951, 1961 are strictly comparable; those for 1911-1931 are comparable with later figures for all practical purposes. The 1966 figures are estimates.

In 1941 about one-half of the labour force was engaged in agriculture, forestry and fishing; by 1951 the proportion was down to one-third, while in 1961 it was a little over one-fifth. Currently, less than one-fifth is so engaged. The proportion in the service occupations rose from 36 to 59 per cent over the period.

During the ten year period 1941 to 1951, the number engaged in forestry, fishing and agriculture decreased by almost 28,000; employment in mining, manufacturing and construction industries increased by over 30,000; and in the service industries by over 62,000.

Table 84

NUMERICAL AND PERCENTAGE DISTRIBUTION OF THE LABOUR FORCE,
BY INDUSTRY SECTOR, ALBERTA, 1911 - 1966

	Forestry, Fishing and Agricultural Industries		Service Sector		Mining, Manufacturing and Construction Industries		Total	
	No.	%	No.	%	No.	%	No.	%
1911	82,100	50.8	41,468	25.7	38,043	23.5	161,610	100.0
1921	114,874	53.2	65,707	30.4	35,424	16.4	216,005	100.0
1931	148,253	51.8	88,346	30.9	49,449	17.3	286,015	100.0
1941	145,252	50.5	104,901	36.4	37,678	13.1	287,831	100.0
1951	117,601	33.3	167,517	47.4	68,379	19.3	353,497	100.0
1961	107,196	21.9	285,388	58.3	96,927	19.8	489,511	100.0
1966	100,000	17.8	333,000	59.2	129,000	23.0	562,000	100.0

Shifts between industrial sectors were even more pronounced during the period 1951-1961. While agricultural employment fell by 10,000, the number engaged in the mining, manufacturing and construction industries and in the service industries increased by 29,000 and 118,000 respectively.

The shifts in the male labour force compared with those in the female labour force are interesting in contrast with one another. Between 1951 and 1961 the number of men engaged in agriculture declined by 20,000; the number of those engaged in the mining, manufacturing and construction industries rose by 24,000; and of those in the service industries rose by 68,000. The number of females engaged in the agriculture industry rose by 10,000; of those engaged in mining, manufacturing and construction rose by 5,000; and of those in service industries rose by 50,000.

The industrial trend away from agriculture and particularly towards the service sector was accompanied by distinct numerical changes between 1941 and 1961 in the occupational framework of the economy, suggesting a general shift in the skills of the labour force.

Table 85
NUMERICAL AND PERCENTAGE DISTRIBUTION OF LABOUR FORCE,
BY MAJOR OCCUPATION GROUP, ALBERTA, 1941 - 1961

	1941		1951		1961	
	Number	%	Number	%	Number	%
Management	14,047	5.57	28,350	8.02	41,691	8.52
Professional and Technical	16,541	5.75	23,874	6.75	46,579	9.52
Clerical	14,214	4.94	30,361	8.59	55,317	11.30
Sales	10,387	3.61	18,496	5.23	31,629	6.46
Service and Recreational	25,547	8.88	34,895	9.87	59,055	12.06
Transportation and Communication	11,409	3.96	19,829	5.61	28,261	5.77
Farmers and Farm Workers	141,052	49.00	114,926	32.52	104,162	21.28
Loggers, Trappers, Hunters and Fishermen	3,942	1.37	2,303	.65	3,009	.61
Miners and Related Wkrs.	7,540	2.62	7,469	2.11	5,291	1.08
Craftsmen, Production Process and Related Wkrs.*	30,471	10.59	54,177	15.33	83,449	17.05
Labourers*	10,273	3.57	16,771	4.74	19,615	4.01
Occupation Not Stated	408	.14	2,046	.58	11,453	2.34
All Occupations	287,831	100.00	353,497	100.00	489,511	100.00

* Note: data between years are not strictly comparable for craftsmen, production process and related workers, and for labourers.

The "labour force" comprises those persons in a population 15 years of age and over who are either employed or unemployed but actively seeking work. The "participation rate" is the proportion that the labour force bears to a total population. A "population", in this context, comprises all persons in an age group, or all persons of one sex, or all persons.

The changes and differences in male and female participation rates are noteworthy.

Participation rates of most male age groups were lower in 1961 than in 1951. Decreases were most pronounced in the age groups: 15 to 19, 20 to 24, and 65 plus. Presumably the increased emphasis of employers on the educational qualifications of their employees has been a major factor in deterring many in the 15 to 19 age group from entering the labour force until such time as they have acquired adequate skills. A complementary factor is the realization by young people that higher incomes can be obtained through better training and education.

Retirement at age 65 is becoming mandatory in more and more firms and organizations. The introduction of the Canada Pension Plan, the increasing number of private company pension plans complementing the C. P. P. and a greater accumulation of other forms of retirement capital have made possible retirement at an earlier age. These factors combined with fewer jobs available for older workers, have induced or allowed more and more men to withdraw completely from the labour force by or soon after age 65.

The Department of Education records indicate that, as compared with 1951 and 1961, more of those leaving the regular school system in 1967 did so with further education in mind. The records also indicate a complementary decline in the number finding or seeking immediate employment relative to the total number of students leaving school.

Table 86

MALE POPULATION, LABOUR FORCE AND PARTICIPATION RATES,
BY AGE GROUP FOR ALBERTA, 1951 - 1961

	15-19	20-24	25-34	35-44	45-54	55-64	65+	Total
1951								
Population	37,882	38,333	74,053	63,370	51,657	41,225	38,727	346,247
Labour Force	20,350	36,120	71,917	62,538	49,201	35,643	15,162	290,931
Participation Rate (%)	53.72	94.23	97.12	97.15	95.25	86.46	39.15	84.02
1961								
Population	50,296	44,403	100,414	87,593	67,212	48,052	40,850	448,420
Labour Force	23,135	40,317	95,931	83,957	63,071	40,389	15,161	361,961
Participation Rate (%)	46.00	90.80	95.54	95.85	93.84	84.05	29.82	80.65

The participation rates of women in the labour force have shown a quite different pattern. Increases are noted in all age groups, but are particularly marked in age groups over 25. The participation rates of married women are strongly influenced not only by employment opportunities but by the changing social mores which by 1961 removed the social stigma from families with both adults working. The availability of part-time jobs, especially in the developing service industries, enables married women to contribute to the family income and still have time for housekeeping responsibilities. In 1941 the female participation rate was just over 20 per cent; by 1961 it had risen to 31 per cent; currently it is estimated at over 40 per cent.

Table 87

FEMALE POPULATION, LABOUR FORCE AND PARTICIPATION RATES,
BY AGE GROUP FOR ALBERTA, 1951 - 1961

	15-19	20-24	25-34	35-44	45-54	55-64	65+	Total
1951								
Population	36,059	37,194	74,613	59,110	40,823	30,433	28,216	306,448
Labour Force	10,033	15,864	14,968	10,509	6,448	3,542	1,202	62,566
Participation Rate (%)	27.82	42.65	20.06	17.78	15.80	11.64	4.26	20.42
1961								
Population	48,708	44,751	92,157	85,030	61,335	35,591	42,228	413,800
Labour Force	14,765	20,948	27,651	29,274	22,690	10,037	2,185	127,550
Participation Rate (%)	30.31	46.81	30.00	34.43	36.99	25.35	5.17	30.82

Since 1940 the Alberta economy has been stimulated by the high and generally stable prices for agricultural products, by the investments and expenditures in the various phases of the oil industry, by the general buoyancy of North American demand for raw materials and products, by demand generated through the large influx of immigrants from other provinces and Europe who were attracted by, and who in turn helped generate, boom conditions, and by the wave of manufacturing industries established to serve the growing local and national markets. The interactions of these various growth factors induced demands on the labour pool for a variety of occupational skills. Because of the buoyancy in the economy and through the educational system in the province, most members of the labour force who have been dislocated through structural changes have experienced little difficulty in moving laterally between industries or adapting to alternative occupations. Provincial participation rates for the population as a whole have been consistently higher than the national average; and unemployment rates, consistently lower.



Mount Edith Cavell, towering more than 11,000 feet high in Jasper National Park, wears a perpetual mantle of snow.



The University of Alberta, one of three universities in the province, with a total enrolment of about 27,000.

EDUCATION AND TRAINING

Over the past two decades the demand for persons with a higher level of education has led to increased enrollments in high schools, vocational schools and universities. The percentage of students enrolled in Grade 12, who started in Grade 1 eleven years earlier, rose from 35 per cent in 1952 to over 90 per cent in 1969 (disregarding inter - provincial migration). Full time university enrolment over the past 25 years has increased from 3,000 students to over 23,000 students.

One third of the provincial budget is allocated to education.

Alberta has a well established apprenticeship training program covering 31 designated trades. Apprentices receive technical training in a trade school and are indentured to employers who provide on-the-job training and experience. Wages during the training period are paid in accordance with experience and journeymen rates of pay.

Financial support for the program is currently given by the federal government under the terms of the Adult Occupational Training Act, 1967 which is administered by the Department of Manpower and Immigration. That Department also co-ordinates provincial standards for certain trades. Tradesmen of one province who meet these standards are automatically recognized as qualified tradesmen in other provinces. As of March 31, 1969, 4,839 Alberta journeymen had been awarded the Red Seal certification signifying inter-provincial acceptability. Red Seal certification presently applies to 13 trades. To the end of 1968, 14,934 apprentices had graduated with Completion of Apprenticeship Certificates, and a further 8,642 apprentices were indentured in the designated trades.

Table 88

STUDENT ENROLLMENT IN GRADES ONE TO TWELVE,
AND AT UNIVERSITIES AND PUBLIC COLLEGES, YEARS SPECIFIED, ALBERTA

	Full-time Winter Session Students Enrolled At				
	Students Grades 1-12 no.	University of Alberta no.	University of Calgary no.	University of Lethbridge no.	Public Colleges no.
1905-1906	24,254				
1915-1916	97,286	418			
1924-1925	147,796	1,254			
1935-1936	167,193	1,985			
1945-1946	155,455	3,235	155		
1955-1956	223,949	3,483	330		
1965-1966	368,136	10,274	3,268		678
1966-1967	379,893	11,489	4,108		2,251
1967-1968	393,719	13,027	4,980	638	3,267
1968-1969	401,587	15,293	6,795	1,024	3,420

Table 89

NUMBER OF SCHOOLS, SCHOOL ROOMS, TEACHERS,
AND STUDENT/TEACHER RATIOS, SPECIFIED YEARS, ALBERTA

	Schools No.	School Rooms No.	Teachers No.	Students/ Teacher Ratio
1905	476	628		
1915	2,138	3,082		
1924-1925	3,033	4,759		
1935-1936	3,492	5,873		
1945-1946	2,722	5,716	5,868	26.5/1
1955-1956	1,558	7,801	8,815	25.4/1
1965-1966	1,376	13,601	17,183	21.4/1
1966-1967	1,385	14,232	18,314	20.7/1
1967-1968	1,388	14,889	19,579	20.1/1
1968-1969	1,400	15,516	20,687	19.4/1

The Alberta Apprenticeship Act (1944) makes obligatory government consideration of requests for the organization of a new apprenticeship training program initiated by interested groups of employees and employers. If it is agreed that the need and demand for tradesmen in a skill not presently designated by the government warrant the formation of a new trade, then a training program in the approved trade is planned for and administered under the Act. All trade courses are periodically reviewed by advisory committees consisting of employers, employees, instructors and apprenticeship supervisors.

The following table provides information concerning the apprentice training program and certification of tradesmen in Alberta. Minimum education requirements may be waived if the candidate can pass a set evaluative examination.

Table 90

LENGTH OF APPRENTICESHIP PERIOD, MINIMUM EDUCATIONAL REQUIREMENTS AND TYPE OF CERTIFICATION GRANTED,
BY TRADE, ALBERTA - JUNE, 1969

Trade	Length of Apprenticeship in Years	Technical training Weeks per year, for the following years				Minimum Education Required (grade)	Journeyman Certification		Red Seal Certification Available
		1st	2nd	3rd	4th		Voluntary Ticket	Compulsory Ticket	
Appliance Serviceman	4	6	6	6	6	10	x	-	-
Auto Body Mechanic	4	6	6	6	6	9	-	x	x
Baker	3	8	8	8	-	9	x	-	-
Bricklayer	4	6	8	8	8	9	x	x	x
Carpenter	4	8	8	8	8	9	x	-	x
Communication Electrician	4	6	6	6	6	10	-	-	-
Cook	3	8	8	8	-	9	x	-	-
Electrician	4	8	8	8	12	10	-	x	x
Electrical Mechanic	4	8	8	8	8	10	-	-	-
Floorcovering Mechanic	4	5	5	5	5	9	-	-	-
Gasfitter	3	4	-	3	-	9	-	x	-
Glass Worker	4	6	6	6	6	10	-	-	-
Heavy Duty Mechanic	4	8	8	6	6	9	-	x	x
Instrument Mechanic	4	8	8	8	12	11	-	-	-
Iron Worker	4	6	6	6	6	10	-	-	-
Lather	3	6	6	6	-	9	x	-	-
Machinist	4	8	8	8	8	10	x	-	x
Millwright	4	8	8	8	8	10	x	-	x
Motor Mechanic	4	8	8	8	8	9	-	x	x
Painter and Decorator	4	6	6	6	6	9	x	-	-
Partsman	3	8	6	6	-	10	x	-	-
Plasterer	4	6	-	6	6	9	x	-	-
Plumber	4	8	8	8	8	10	-	x	x
Power Electrician	4	8	8	8	8	10	x	-	-
Radio Technician	4	8	8	8	8	10	-	x	x
Refrigeration Mechanic	4	8	8	8	8	9	-	x	x
Roofer	3	6	6	6	-	9	-	-	-
Sheet Metal Mechanic	4	10	8	8	8	9	-	x	x
Steamfitter	4	8	8	8	8	10	-	x	x
Tile Setter	4	6	-	6	6	9	x	-	-
Welder	3	6	6	6	-	9	-	x	-

The federal government, under the Adult Occupational Training Act, will also pay the cost of approved training-in-industry programs. These programs are designed to upgrade the skills of production and related employees. The provincial government has parallel legislation to cover the cost of similar programs not eligible for federal support. Other programs which are funded jointly by the federal and provincial governments include the Research Agreement, which supports research done in the area

of vocational training, and the Vocational Rehabilitation of Disabled Persons Agreement, which provides training for disabled persons up to the undergraduate level of university.

Vocational and composite high schools have been established throughout the province and offer training courses that prepare students for direct entry into industry and business or provide a starting point for further education. Coupled with various other institutions that offer pre-employment courses, training centres in Alberta have courses in a diversified spectrum of industrial activities. Information pertaining to schools, programs, and course work may be secured from the Chief Superintendent of Schools, Department of Education, or directly from the schools concerned.

The Department of Agriculture operates agricultural vocational schools at Olds, Vermilion and Fairview. Programs are designed to serve the farm youth of the agricultural industry. Information pertaining to course work is available from the Department of Agriculture.

The Southern Alberta Institute of Technology in Calgary and the Northern Alberta Institute of Technology in Edmonton offer vocational and business education patterns, and a wide selection of technology programs. About 6,500 full time day students attend the two institutes; annual enrollment is of the order of 29,000. Facilities are provided for apprenticeship training in the designated trades. Information as to curricula and costs of the technical courses may be secured from the Director of Vocational Education, Department of Education; or, as to trades training, from the Director of Apprenticeship, Department of Labour.

These institutes prepare the individual for gainful employment and assist in creating an adequate supply of well-trained manpower for industry. Education authorities receive advice and assistance in the design and development of technology programs through operational advisory committees comprising members of the industrial community. This liaison indicates the concern by industrialists for proper educational courses and by educationalists for co-ordination of skill development and manpower requirements.

In addition to these, a number of privately operated trade and correspondence schools offer courses within the province, after receiving clearance as to adequacy of course content from the Department of Labour.

Five public colleges in the province offer first and second year university credit courses, and post high school education for those who do not wish to go to university and career or semi-professional programs. Other forms of colleges which are not funded by the provincial government operate in the province and offer high school courses as well as a limited number of pre-employment business courses.



Livestock feedlots, like this one at Lethbridge, play an increasingly important role in the meat production chain in Alberta.



One of many gas separation plants in Alberta, this one is located at Jumping Pound.

INDUSTRIAL ASSISTANCE

Various branches of the provincial and federal governments, planning commissions, chartered banks, railways, and utility companies are equipped to gather, analyze, compile, and publish information for the purpose of furthering the industrial development of the province.

PROVINCIAL GOVERNMENT SERVICES:

Industrial Development Branch:

The prime function of the Industrial Development Branch is to attract new industries to Alberta and to assist existing industries to expand. It acts as a central information centre, providing data on markets, sources of raw material, labour costs, plant sites and other industrial location factors, and acts as an intermediary for industries that require such services.

Offices are maintained in Calgary, Montreal and Los Angeles. The branch also works in close co-operation with Alberta House, London, England to promote industry. The expansion of the Industrial Development Branch through additional international offices is presently being considered.

Industrial Development Office,
Department of Industry
and Tourism,
1820 Centennial Building,
Edmonton, Alberta.

Administrator, Montreal Office
Government of the Province
of Alberta,
No. 1 Place Ville Marie,
Montreal 2, Quebec.

Industrial Development Officer,
Industrial Development Branch,
Department of Industry
and Tourism,
620 - 7 Avenue S. W.,
Calgary, Alberta.

Administrator,
Los Angeles Office,
Government of the Province
of Alberta,
550 South Grand Avenue,
Los Angeles, California. 90017

Agent General,
Alberta House,
37 Hill Street,
London W 1, England.

Alberta Bureau of Statistics:

The Bureau gathers, analyzes and publishes statistics pertinent to the economic development of Alberta. Current and long term trends and indicators are documented and analyzed.

Special market surveys may be conducted at the request of businessmen, or initiated by the Bureau, when it is believed that the existing market is of the size sufficient to justify the establishment of a new industrial plant.

The Alberta Bureau of Statistics,
Department of Industry and Tourism,
1529 Centennial Building,
Edmonton, Alberta.

Economic Research Branch:

The Economic Research Branch is responsible for preparing feasibility studies, forecasts and projections, regional studies and growth centre studies. It is also charged with satisfying the research needs of the Northern Alberta Development Council and the Alberta Government Travel Bureau.

Economic Research Branch,
1502 Centennial Building,
Edmonton, Alberta.

Alberta Securities Commission:

The Commission regulates and controls the issuance of stocks, bonds and debentures for sale to the public, and investigates all fraudulent acts committed in connection with the sales of securities. All persons engaged in the securities business must be registered and a prospectus for primary distribution of all securities must be filed.

Alberta Securities Commission,
Department of the Attorney General,
403 Empire Building,
Edmonton, Alberta.

Agricultural Economics Division:

This Branch of the Department of Agriculture carries out an extensive education and information program on the principles of farm management. Agricultural statistics for the province are compiled by the Branch. Surveys are conducted on the costs and returns of producing various agricultural commodities. Economic feasibility studies of water and land development proposals are prepared.

Agricultural Economics Division,
Department of Agriculture,
10405 - 100 Avenue,
Edmonton, Alberta.

The Alberta Commercial Corporation:

This Crown corporation offers financial assistance to Alberta manufacturing and producers industries. Three types of financing are available. The first is the purchase of raw materials by the Corporation for sale and delivery to a client company as required. Through this method Alberta firms are able to obtain materials when prices are most attractive, without tying up working capital in inventories. This service can, in some cases, be extended to finished goods inventories.

Secondly, in cases where no suitable arrangements can be made with other institutions, the Corporation also is able to finance production equipment. Thirdly, the Corporation is able to finance land and buildings.

The Corporation also offers business management guidance and advice, without cost, to small and growing operations who cannot afford such services from normal sources. Advice is available in conjunction with the financial assistance offered by the Corporation, and may be made available to other firms.

The Alberta Commercial Corporation,
1810 Centennial Building,
Edmonton, Alberta.

The Alberta Commercial Corporation,
620 - 7 Avenue S. W.,
Calgary, Alberta.

The Alberta Freight Bureau:

This Bureau gathers and supplies information on freight rates and charges for goods transported by all types of carriers in Canada and the United States. The Bureau works in Ottawa to negotiate rates with the management groups of the transportation companies in an endeavour to secure and maintain rates and charges that are advantageous to Alberta producers in the transporting of goods into and out of the Province.

Alberta Freight Bureau,
1812 Centennial Building,
Edmonton, Alberta.

Alberta Research Council, Industrial and Engineering Services Division:

This Division of the Alberta Research Council maintains a technical information service to assist industries with technical problems, and an industrial engineering service to help solve production problems. Some research and testing projects may be undertaken for industry on a contract basis.

Industrial and Engineering Services Division,
Alberta Research Council,
87 Avenue and 114 Street,
Edmonton, Alberta.

Northern Alberta Development Council:

The Council has the responsibility of fostering increased economic and social development in areas of the province north of the 55th parallel.

Northern Alberta Development Council,
324 Legislative Building,
Edmonton, Alberta.

Northern Alberta Development Council,
202 Provincial Building,
Grande Prairie, Alberta.

Research and Planning Division, Human Resources Development Authority:

This Division conducts comprehensive socio-economic studies on specific areas of Alberta which have special needs and where federal

or provincial programs are involved. The studies include inventories of the resources of an area, analysis of the economic potential of the area, projections of the labour force, summaries of population characteristics re health, education and welfare, as well as research and analysis of other topics. In addition, the Division identifies overlapping of programs and areas where program gaps exist. These are brought to the attention of appropriate departments.

Research and Planning Division,
Human Resources Development Authority,
Room 214, Terrace Building,
Edmonton, Alberta.

FEDERAL GOVERNMENT SERVICES:

Department of Industry, Trade and Commerce, Regional Office:

The new integrated Department of Industry, Trade and Commerce has a role to further the growth, productivity, employment opportunities and general prosperity of the Canadian economy through the efficient development of Canadian manufacturing and producing industries and the expansion of its trade and tourism. The regional office is available to assist Alberta producers and businessmen through incentive programs (PAIT, ERDIA, etc.) and advice from either Ottawa based or foreign based specialists.

Regional Office,
Department of Industry, Trade and Commerce,
802 Chancery Hall,
Edmonton, Alberta.

Industrial Development Bank:

Was established as a source of term financing for businesses in Canada unable to raise funds on reasonable terms and conditions from conventional sources with particular consideration to be given to the financing problems of small enterprises.

Manager,
Industrial Development Bank,
3 Floor,
Hudson's Bay Oil and Gas Bldg.,
Calgary, Alberta.

Manager,
Industrial Development Bank,
Room 601,
Chancery Hall,
Edmonton, Alberta.

INDUSTRIAL DEVELOPMENT BOARDS: MUNICIPALITIES

City of Calgary

Co-ordinator of
Industrial Development,
City Hall,
Calgary, Alberta.

City of Camrose

Industrial Co-ordinator,
Camrose, Alberta.

City of Drumheller

Industrial Co-ordinator,
Drumheller, Alberta.

City of Edmonton

Industrial Co-ordinator,
City Hall,
Edmonton 15, Alberta.

City of Grande Prairie

Industrial Co-ordinator,
Industrial Development
Commission,
10011 - 103 Avenue,
Grande Prairie, Alberta.

City of Lethbridge

Industrial Representative,
Regional Development Bldg.,
Lethbridge, Alberta.

City of Lloydminster

City Commissioner,
5011 - 49 Avenue,
Lloydminster, Alberta.

City of Medicine Hat

Industrial Representative,
Medicine Hat, Alberta.

City of Red Deer

Industrial Director,
City Hall,
Red Deer, Alberta.

City of Wetaskiwin

Industrial Representative,
Box 666,
Wetaskiwin, Alberta.

Town of Athabasca

Industrial Representative,
P. O. Box 929,
Athabasca, Alberta.

Town of Barrhead

Industrial Representative
Box 189,
Barrhead, Alberta.

Town of Brooks

Industrial Representative,
Brooks, Alberta

Town of Claresholm

Industrial Representative,
P. O. Box 1000,
Claresholm, Alberta.

Town of Edson

Industrial Co-ordinator,
Box 1388,
Edson, Alberta.

Town of Falher

Box 30,
Falher, Alberta.

Town of Hinton

Industrial Representative,
Box 818, Civic Bldg.,
Hinton, Alberta.

Town of Innisfail

Industrial Representative,
P. O. Box 220,
Innisfail, Alberta.

Town of Olds

Industrial Representative,
Olds, Alberta.

Town of Peace River

Industrial Representative,
Box 125,
Peace River, Alberta.

Town of Ponoka

Industrial Representative,
Box 1029,
Ponoka, Alberta.

Town of Redwater

Industrial Representative,
Redwater, Alberta.

Town of Rimbey

Industrial Representative,
Rimbey, Alberta.

Town of St. Paul

Industrial Representative,
Box 767,
St. Paul, Alberta.

Town of Stettler

Industrial Representative,
Box 280,
Stettler, Alberta.

Town of Taber

Industrial Co-ordinator,
Taber, Alberta.

Town of Wainwright

Industrial Representative,
Wainwright, Alberta.

Town of Westlock Industrial Representative, Westlock, Alberta.	Office of Vice-President for Alberta, Bank of Montreal, 140 - 8 Avenue S. W., Calgary, Alberta.	The Canadian Pacific Railway Company Assistant Manager, Industrial and Agricultural Development, Room 211, C P R Building, 10012 - Jasper Avenue, Edmonton, Alberta.	City of Edmonton Electrical Distribution Department: Commercial Supervisor, Commercial Section, Edmonton Electrical Distribution System, City Hall, Edmonton, Alberta.
Town of Whitecourt Industrial Representative, Whitecourt, Alberta.	Bank of Nova Scotia Assistant General Manager, Alberta Regional Office, Bank of Nova Scotia, 526 Lougheed Building, 1 Street and 6 Avenue S. W., Calgary, Alberta.	Assistant Manager, Industrial and Agricultural Development, The Canadian Pacific Railway Company, Room 44, Palliser Hotel, Calgary, Alberta.	Waterworks Distribution Department: Administrative Assistant to the Superintendent, Waterworks Distribution System, City Hall, Edmonton, Alberta.
REGIONAL PLANNING COMMISSIONS:		UTILITY COMPANIES: (Electric)	Telephone System: Commercial Manager, Special Accounts Section, Edmonton Telephone System, 807 C N Tower, Edmonton, Alberta.
Battle River Regional Planning Commission, P. O. Box 1570, Wetaskiwin, Alberta.	Manager, Main Branch, Bank of Nova Scotia, 10050 - Jasper Avenue, Edmonton, Alberta.	Marketing Department, Calgary Power Limited, 10012 - Jasper Avenue, Edmonton, Alberta.	City of Lethbridge Electrical Distribution Department: Utilities Director, Lethbridge Electrical Distribution System, City Hall, Lethbridge, Alberta.
Calgary Regional Planning Commission, 343 - 11 Avenue S. W., Calgary, Alberta.	Royal Bank of Canada Manager, Business Development Department, Royal Bank of Canada, 409 - 8 Avenue W., Calgary, Alberta.	Marketing Department, Canadian Utilities Limited, 10040 - 104 Street, Edmonton, Alberta.	Waterworks Distribution Department: Engineering Director, Lethbridge Water Distribution System, City Hall, Lethbridge, Alberta.
Edmonton Regional Planning Commission, 10046 - 106 Street, Edmonton, Alberta.	Manager, Royal Bank of Canada, 10107 - Jasper Avenue, Edmonton, Alberta.	UTILITY COMPANIES: (Gas)	City of Medicine Hat Electrical Distribution Department: Director of Utilities, Utilities Building, 830A - 2 Street S. E., Medicine Hat, Alberta.
Medicine Hat Regional Planning Commission, 509 - 3 St. S. E., Medicine Hat, Alberta.	Toronto-Dominion Bank Special Representative, Business Development, Alberta Division Office, Toronto-Dominion Bank, Jasper Avenue and 100 Street, Edmonton, Alberta.	Sales and Industrial Dev., Canadian Western Natural Gas Co. Ltd., 140 - 6 Avenue S. W., Calgary, Alberta.	Waterworks Distribution Department: Public Works Director, Municipal Services Building, 188 - Kipling Street, Medicine Hat, Alberta.
Oldman Regional Planning Commission, 909 - 4 Avenue S. W., Lethbridge, Alberta.	Oil and Gas Department, Toronto-Dominion Bank, 505 - 8 Avenue W., Calgary, Alberta.	Sales and Industrial Dev., Northwestern Utilities Ltd., 10040 - 104 Street, Edmonton, Alberta.	City of Red Deer Electrical Distribution Department: Electric Light and Power Superintendent, City Hall, Red Deer, Alberta.
Peace River Regional Planning Commission, 9902 - 101 Street, Grande Prairie, Alberta.	Treasury Branch - Government of Alberta Manager, Business Development Dept., Treasury Branch, 717 - 6 Avenue S. W., Calgary, Alberta.	Plains Western Gas and Electric Co. Ltd., 9924 - 63 Avenue, Edmonton, Alberta.	Waterworks Distribution Department: City Engineer, City Hall, Red Deer, Alberta.
Red Deer Regional Planning Commission, 4920 - 53 Street, Red Deer, Alberta.	RAILWAYS:	CIVIC UTILITY DISTRI- BUTION SYSTEMS:	OTHER INDUSTRIAL INFORMATION SERVICES:
BANKS:	The Canadian National Railway Company Manager, Industrial Development, Research and Development Department, The Canadian National Railway Company, C N Tower, Edmonton, Alberta.	City of Calgary Electrical Distribution Department: Supervisor, Commercial Services, Electric Light Department, Administration Building, Manchester Area, Calgary, Alberta.	Managing Director, Edmonton Area Industrial Development Association, 10410 - 81 Avenue, Edmonton, Alberta.
Canadian Imperial Bank of Commerce Business Development Department, Regional Office, Canadian Imperial Bank of Commerce, 309 - 8 Avenue S. W., Calgary, Alberta.	Industrial Development Offices, The Canadian National Railway Company, C N R Station, Calgary, Alberta.	Waterworks Distribution Department: Assistant Deputy City Engineer, Engineering Department, City of Calgary, Calgary, Alberta.	
Manager, Business Development Department, Canadian Imperial Bank of Commerce, 402 Jasper Avenue and 100th Street, Edmonton, Alberta.			
The Mercantile Bank of Canada Manager, The Mercantile Bank of Canada, 700 - 8 Avenue S. W., Calgary, Alberta.			
Bank of Montreal Manager, Business Development and Public Relations Office, Main Branch, Bank of Montreal, 10089 - Jasper Avenue, Edmonton, Alberta.			

CENSUS DATA

In the following pages are some key census data on the province. Census material 1966 is used as available at time of publication. Only 1961 data are available concerning families, racial origin, language spoken, birthplace, religion, and labour force; new data on these topics will be available only following the 1971 census of Canada.

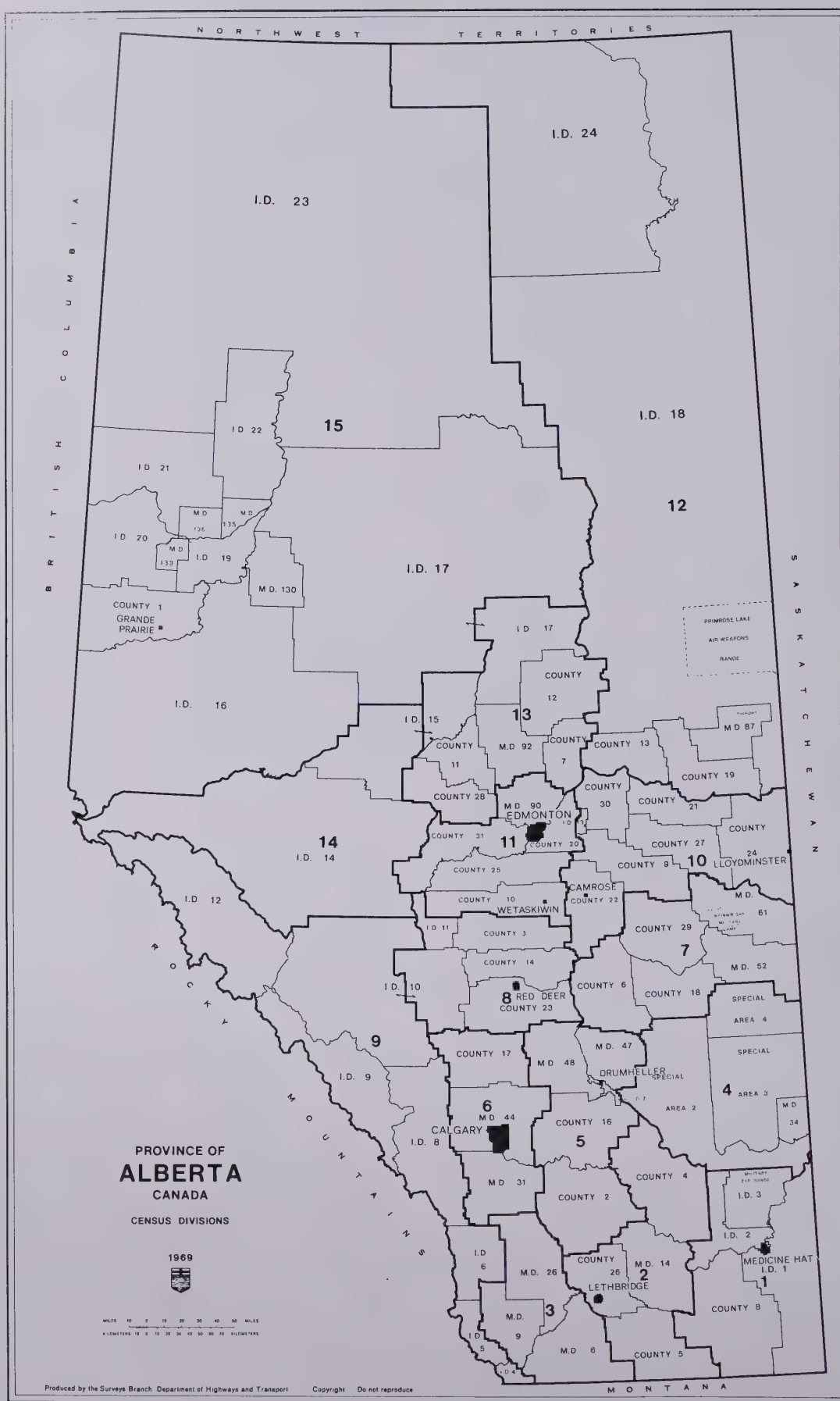


Table 91

POPULATION, BY CENSUS DIVISIONS - ALBERTA
1956 - 1961 - 1966

Census Division	1956		1961		1966	
	No.	Percent of Total	No.	Percent of Total	No.	Percent of Total
1	34,496	3.1	39,140	2.9	38,858	2.7
2	74,991	6.7	33,306	6.3	82,719	5.7
3	30,426	2.7	30,967	2.3	29,592	2.0
4	14,294	1.3	15,020	1.1	14,224	1.0
5	38,120	3.4	38,115	2.9	35,987	2.5
6	237,886	21.2	317,989	23.9	369,140	25.2
7	40,214	3.6	40,837	3.1	40,833	2.8
8	64,168	5.7	76,533	5.7	83,912	5.7
9	17,239	1.5	20,274	1.5	18,195	1.2
10	71,500	6.3	70,177	5.3	70,211	4.8
11	323,539	28.8	410,679	30.8	476,053	32.5
12	44,947	4.0	47,310	3.6	50,635	3.5
13	45,033	4.0	45,431	3.4	44,142	3.0
14	15,846	1.4	19,282	1.4	20,358	1.4
15	70,417	6.3	76,884	5.8	88,344	6.0
TOTAL	1,123,116	100.0	1,331,944	100.0	1,463,203	100.0

Table 92

NUMERICAL AND PERCENTAGE DISTRIBUTION OF POPULATION
BY RURAL AND URBAN, ALBERTA, 1901 - 1966

Year	Total No.	Rural No.	Percent of Total	Urban No.	Percent of Total
1901	73,022	61,171	83.8	11,851	16.2
1911	374,295	264,359	70.6	109,936	29.4
1921	588,454	411,284	69.9	177,170	30.1
1931	731,605	503,723	68.9	227,882	31.1
1941	796,169	545,564	68.5	250,605	31.5
1951	939,501	509,413	54.2	430,088	45.8
1961	1,331,944	480,368	36.1	851,576	63.9
1966	1,463,203	455,796	31.2	1,007,407	68.8

Table 93

AREA AND DENSITY OF POPULATION FOR CENSUS DIVISIONS
ALBERTA, 1956, 1961 and 1966

Census Division	Land Area in Square Miles	Population - 1956		Population - 1961		Population - 1966	
		Population No.	Density No.	Population No.	Density No.	Population No.	Density No.
1	8,079	34,496	4.27	39,140	4.84	38,858	4.81
2	6,991	74,991	10.73	83,306	11.92	82,719	11.83
3	4,794	30,426	6.35	30,967	6.46	29,592	6.17
4	8,474	14,294	1.69	15,020	1.77	14,224	1.68
5	6,476	38,120	5.89	38,115	5.89	35,987	5.56
6	4,946	237,886	48.10	317,989	64.29	369,140	74.63
7	7,581	40,214	5.30	40,837	5.39	40,833	5.39
8	5,655	64,168	11.35	76,533	13.53	83,912	14.84
9	17,775	17,239	0.97	20,274	1.14	18,195	1.02
10	8,167	71,500	8.75	70,177	8.59	70,211	8.60
11	5,578	323,539	58.00	410,679	73.62	476,053	85.34
12	50,242	44,947	0.89	47,310	0.94	50,635	1.01
13	9,378	45,033	4.80	45,431	4.84	44,142	4.71
14	11,980	15,846	1.32	19,282	1.61	20,358	1.70
15	92,684	70,417	0.76	76,884	0.83	88,344	0.95
Alberta	248,800	1,123,116	4.51	1,331,944	5.35	1,463,203	5.88

Table 94

POPULATION OF CITIES, TOWNS AND VILLAGES, AND PERCENTAGE
OF TOTAL POPULATION, ALBERTA
1901 - 1966

	Population			Percent of Total Population		
	Cities No.	Towns No.	Villages No.	Cities %	Towns %	Villages %
1901	4,091	9,518	4,924	5.60	13.03	6.74
1911	90,252	25,881	21,529	24.11	6.91	5.75
1921	147,246	50,145	25,513	25.02	8.52	4.34
1931	194,203	50,155	34,150	26.54	6.86	4.67
1941	215,894	53,623	37,069	27.12	6.74	4.66
1951	342,002	98,565	47,621	36.40	10.49	5.07
1961	636,684	206,992	51,223	47.80	15.54	3.85
1966	829,559	173,182	47,970	56.69	11.84	3.28

Table 95

AREA AND DENSITY OF POPULATION FOR INCORPORATED CITIES
AND TOWNS OF 2,000 PERSONS AND OVER, ALBERTA, 1966

	1966 Population	Area in Square Miles	Persons Per Square Mile
Calgary	330,575	155.80	2,122
Camrose	8,362	3.87	2,161
Drumheller	3,574	0.42	8,510
Edmonton	376,925	85.60	4,403
Grande Prairie	11,417	3.43	3,329
Lethbridge	37,186	13.97	2,662
Medicine Hat	25,574	23.20	1,102
Red Deer	26,171	12.96	2,019
Wetaskiwin	6,008	2.33	2,579
Barrhead	2,592	0.69	3,757
Bonnyville	2,237	0.97	2,306
Brooks	3,354	2.16	1,553
Cardston	2,721	1.75	1,555
Claresholm	2,569	1.03	2,494
Coaldale	2,541	1.13	2,249
Drayton Valley	3,352	1.53	2,191
Edson	3,788	2.18	1,738
Fort MacLeod	2,709	5.70	475
Fort McMurray	2,614	3.22	812
Fort Saskatchewan	4,152	3.56	1,166
Hanna	2,633	0.71	3,708
High Prairie	2,241	0.71	3,156
High River	2,239	1.06	2,112
Hinton	4,307	5.50	783
Innisfail	2,531	1.27	1,993
Lacombe	3,035	1.50	2,023
Leduc	2,856	2.10	1,360
Olds	2,999	1.11	2,702
Peace River	4,087	2.25	1,816
Pincher Creek	2,882	.82	3,515
Ponoka	4,421	2.47	1,790
Redcliff	2,141	3.76	569
Rocky Mountain House	2,446	1.56	1,568
St. Albert	9,736	6.05	1,609
Stettler	3,988	1.55	2,573
St. Paul	3,543	1.87	1,895
Taber	4,584	2.53	1,812
Vegreville	3,598	2.06	1,747
Vermilion	2,685	2.20	1,220
Wainwright	3,867	2.60	1,487
Westlock	2,685	1.50	1,790
Whitecourt	2,279	10.00	228

POPULATION OF INCORPORATED CITIES, TOWNS AND VILLAGES
ALBERTA, 1931 - 1966

City (C), Town (T) or Village (V)		Census Division	1931	1941	1951	1961	1966
Acme	V	5	234	285	275	328	335
Airdrie	V	6	198	191	267	524	778
Alberta Beach	V	13	38	59	79	135	143
Alix	V	8	241	360	461	631	636
Alliance	V	7	260	233	281	291	291
Amisk	V	7	-	-	-	127	134
Andrew	V	10	115	326	625	601	525
Arrowwood	V	5	293	251	222	195	174
Athabasca	T	13	573	578	1,068	1,487	1,551
Barons	V	2	284	233	369	345	270
Barrhead	T	13	222	399	1,243	2,286	2,592
Bashaw	T	10	385	494	603	614	697
Bassano	T	2	615	582	624	815	827
Bawlf	V	10	183	227	236	203	220
Beaverlodge	T	15	211	331	514	897	1,083
Beiseker	V	6	230	240	325	360	404
Bellevue	V	9	-	-	-	1,323	1,174
Bentley	V	8	233	279	439	588	637
Berwyn	V	15	-	206	288	347	430
Betula Beach	V	11	-	-	-	7	-
Beverly	T	11	1,111	981	2,159	9,041	-
Big Valley	V	7	455	291	307	461	378
Bittern Lake	V	10	47	50	25	76	80
Black Diamond	T	6	683	890	1,154	1,043	858
Blackfalds	V	8	84	113	154	477	729
Blackie	V	6	251	223	224	184	156
Blairmore	T	9	1,629	1,731	1,933	1,980	1,779
Bon Accord	V	11	-	-	-	-	147
Bonnyville	T	12	362	603	1,139	1,736	2,237
Bonnyville Beach	V	12	-	-	-	-	1
Botha	V	7	107	111	98	112	134
Bowden	V	8	233	234	277	437	610
Bow Island	T	1	314	291	653	1,122	1,160
Bowness	T	6	-	-	2,922	9,184	-
Boyle	V	13	-	-	-	346	437
Breton	V	11	-	-	-	428	447
Brooks	T	2	708	888	1,648	2,827	3,354
Bruderheim	V	10	280	237	387	299	290
Burdett	V	1	121	123	118	229	207
Calgary	C	6	83,761	88,904	129,060	249,641	330,575
Calmar	T	11	-	-	944	700	600
Camrose	C	10	2,258	2,598	4,131	6,939	8,362
Canmore	V	9	-	-	-	-	1,445
Carbon	V	5	355	409	374	371	374
Cardston	T	3	1,672	1,864	2,487	2,801	2,721
Carmangay	V	5	279	229	285	297	246
Caroline	V	8	-	-	-	321	294
Carstairs	V	6	387	371	468	665	761
Castor	T	7	634	625	798	1,025	1,090
Cayley	V	6	127	133	139	146	133

City (C), Town (T) or Village (V)		Census Division	1931	1941	1951	1961	1966
Cereal	V	4	185	142	135	195	191
Champion	V	5	310	320	378	419	357
Chauvin	V	7	269	343	340	395	362
Chinook	V	4	176	142	116	114	95
Chipman	V	10	284	240	180	174	183
Claresholm	T	3	1,156	1,265	1,608	2,143	2,569
Clive	V	8	215	224	241	251	238
Cluny	V	5	134	138	202	174	171
Clyde	V	13	186	160	219	259	256
Coaldale	T	2	251	290	806	2,592	2,541
Cochrane	V	6	293	298	530	857	819
Cold Lake	T	12	-	-	-	1,307	1,289
Coleman	T	9	1,704	1,870	1,961	1,713	1,507
Consort	V	4	299	265	396	557	594
Coronation	T	7	738	581	738	864	811
Coutts	V	2	-	-	-	469	427
Cowley	V	3	151	125	119	127	163
Craigmyle	V	5	236	186	136	107	98
Cremona	V	6	-	-	-	221	191
Crossfield	V	6	321	409	443	593	582
Crystal Springs	V	11	-	-	-	13	13
Czar	V	7	140	139	123	196	222
Daysland	T	7	404	438	475	539	632
Delburne	V	8	193	308	395	450	391
Delia	V	5	286	315	278	287	274
Derwent	V	10	107	171	233	281	261
Devon	T	11	-	-	842	1,418	1,283
Dewberry	V	10	-	-	-	179	198
Didsbury	T	6	801	892	1,180	1,254	1,586
Donalda	V	7	169	206	318	289	271
Donnelly	V	15	-	-	-	289	249
Drayton Valley	T	11	-	-	-	3,854	3,352
Drumheller	C	5	2,987	2,748	2,601	2,931	3,574
Duchess	V	2	114	149	258	218	233
Eckville	V	8	169	135	379	580	716
Edberg	V	10	131	132	188	179	167
Edgerton	V	7	189	258	309	295	345
Edmonton	C	11	79,197	93,817	159,631	281,027	376,925
Edmonton Beach	V	11	-	-	-	20	41
Edson	T	14	1,547	1,499	1,956	3,198	3,788
Elk Point	T	12	-	307	453	692	726
Elnora	V	8	153	195	211	214	191
Empress	V	4	314	341	411	405	360
Entwistle	V	11	189	218	-	411	345
Evansburg	V	14	-	-	-	452	472
Fairview	T	15	260	432	929	1,506	1,884
Falher	T	15	253	244	575	741	843
Ferintosh	V	10	161	169	205	174	156
Foremost	V	1	-	-	375	561	554
Forestburg	V	7	291	231	443	677	669
Forest Lawn	T	6	-	899	1,079	12,263	-
Fort Assiniboine	V	13	-	-	-	216	187
Fort Macleod	T	3	1,447	1,912	1,860	2,490	2,709
Fort McMurray	T	12	-	-	926	1,186	2,614

City (C), Town (T) or Village (V)		Census Division	1931	1941	1951	1961	1966
Fort Saskatchewan	T	11	1,001	903	1,076	2,972	4,152
Frank	V	9	268	204	239	223	178
Gadsby	V	7	144	141	128	98	84
Galahad	V	7	150	145	198	231	174
Gibbons	V	11	-	-	-	192	230
Girouxville	V	15	-	-	-	318	305
Gleichen	T	5	514	435	430	426	411
Glendon	V	12	-	-	-	315	350
Glenwood	V	3	-	-	-	274	194
Golden Days	V	11	-	-	-	-	6
Grand Centre	T	12	-	-	-	1,493	1,731
Grande Prairie	C	15	1,464	1,724	2,664	8,352	11,417
Granum	T	3	329	238	327	290	295
Grassy Lake	V	2	-	-	167	274	226
Grimshaw	T	15	137	169	564	1,095	1,376
Gull Lake	V	8	-	21	32	40	48
Hairy Hill	V	10	-	-	205	173	136
Halkirk	V	7	160	118	148	172	177
Hanna	T	4	1,490	1,622	2,027	2,645	2,633
Hardisty	T	7	428	457	536	582	597
Hay Lakes	V	10	125	154	231	233	196
Heisler	V	7	125	-	-	214	214
High Level	T	15	-	-	-	-	708
High Prairie	T	15	-	-	1,141	1,756	2,241
High River	T	6	1,459	1,430	1,888	2,276	2,239
Hill Spring	V	3	-	-	-	243	190
Hines Creek	V	15	-	-	-	398	418
Hinton	T	14	-	-	-	3,529	4,307
Holden	V	10	230	361	504	556	503
Hughenden	V	7	191	164	218	294	274
Hussar	V	5	151	116	120	213	235
Hythe	V	15	278	247	342	449	445
Innisfail	T	8	1,024	1,223	1,417	2,270	2,531
Innisfree	V	10	227	253	287	291	314
Irma	V	7	196	273	369	425	430
Irricana	V	6	161	172	180	167	104
Irvine	T	1	234	240	224	240	209
Island Lake	V	13	-	-	-	12	9
Itaska Beach	V	11	-	-	-	2	1
Jasper Place	T	11	-	-	9,139	30,530	-
Kapasiwin	V	11	-	-	-	2	-
Killam	T	7	326	347	465	552	866
Kinuso	V	15	-	-	238	323	376
Kitscoty	V	10	280	234	235	326	364
Lac La Biche	T	12	313	517	905	1,314	1,490
Lacombe	T	8	1,259	1,603	2,277	3,029	3,035
Lakeview	V	11	-	-	15	12	2
Lamont	V	10	507	438	637	705	835
Lavoy	V	10	151	178	122	131	118
Leduc	T	11	900	871	1,842	2,356	2,856
Legal	V	11	350	462	523	524	572
Lethbridge	C	2	13,489	14,612	22,947	35,454	37,186
Linden	V	5	-	-	-	-	210
Lloydminster (part)	C	10	539	572	1,706	2,944	3,767

City (C), Town (T) or Village (V)		Census Division	<u>1931</u>	<u>1941</u>	<u>1951</u>	<u>1961</u>	<u>1966</u>
Lodgepole	T	11	-	-	-	508	207
Lomond	V	5	176	129	153	244	215
Longview	V	6	-	-	-	-	173
Lougheed	V	7	218	195	186	217	252
Magrath	T	3	1,224	1,207	1,320	1,338	1,220
Ma-Me-O-Beach	V	11	-	-	98	142	103
Manning	T	15	-	-	-	896	1,179
Mannville	V	10	307	396	528	632	683
Marwayne	V	10	-	-	-	379	351
Mayerthorpe	T	13	159	217	472	663	916
McLennan	T	15	-	-	1,074	1,078	1,104
Medicine Hat	C	1	10,300	10,571	16,364	24,484	25,574
Milk River	T	2	350	335	481	801	861
Millet	V	11	300	325	402	403	418
Milo	V	5	135	129	141	167	154
Minburn	V	10	119	129	186	164	143
Mirror	V	8	534	570	635	577	433
Montgomery	T	6	-	-	-	5,077	-
Morinville	T	11	570	580	892	935	995
Morrin	V	5	149	216	226	316	272
Mundare	T	10	832	756	596	603	564
Munson	V	5	164	139	78	82	39
Myrnam	V	10	131	216	388	441	460
Nakamun Park	V	13	-	-	-	-	2
Nampa	V	15	-	-	-	271	288
Nanton	T	3	739	718	934	1,054	940
New Norway	V	10	142	169	258	263	220
New Sarepta	V	11	-	-	-	184	173
Nobleford	V	2	143	111	255	309	345
Norglenwold	V	8	-	-	-	-	23
Okotoks	T	6	760	591	767	1,043	922
Olds	T	6	1,056	1,337	1,617	2,433	2,999
Onoway	V	13	149	156	189	302	375
Oyen	T	4	401	326	433	780	846
Paradise Valley	V	10	-	-	-	-	174
Peace River	T	15	864	873	1,672	2,543	4,087
Penhold	V	8	125	183	174	319	370
Picture Butte	T	2	-	-	865	978	1,013
Pincher Creek	T	3	1,024	994	1,456	2,961	2,882
Plamondon	V	12	-	-	-	-	195
Point Allison	V	11	-	-	-	6	7
Ponoka	T	8	836	1,306	2,574	3,938	4,421
Provost	T	7	533	518	676	1,022	1,328
Radway	V	13	-	-	184	183	158
Raymond	T	2	1,849	2,089	2,279	2,362	1,950
Redcliff	T	1	1,192	1,111	1,538	2,221	2,141
Red Deer	C	8	2,662	3,448	7,575	19,612	26,171
Redwater	T	13	-	-	1,306	1,135	1,041
Rimbey	T	8	304	410	757	1,266	1,502
Rochon Sands	V	7	-	-	-	28	2
Rockyford	V	5	194	201	246	288	281
Rocky Mountain House	T	8	646	800	1,147	2,360	2,446
Rosalind	V	10	-	-	-	-	222
Rosemary	V	2	-	-	-	210	221

City (C), Town (T) or Village (V)		Census Division	1931	1941	1951	1961	1966
Ross Haven	V	13	-	-	-	-	17
Rumsey	V	5	83	90	110	123	108
Rycroft	V	15	-	-	372	500	539
Ryley	V	10	236	323	406	469	438
St. Albert	T	11	825	697	1,129	4,059	9,736
St. Paul	T	12	938	1,018	1,407	2,823	3,543
Sandy Beach	V	13	-	-	-	4	20
Sangudo	V	13	-	173	269	325	314
Seba Beach	V	11	41	84	103	113	155
Sedgewick	T	7	338	320	485	655	760
Sexsmith	V	15	304	325	331	531	491
Silver Beach	V	11	-	-	-	14	31
Slave Lake	T	15	-	-	-	468	1,716
Smoky Lake	T	12	366	430	491	626	871
Spirit River	T	15	232	276	553	890	1,034
Spruce Grove	V	11	76	-	-	465	598
Standard	V	5	218	212	237	266	264
Stavely	T	3	303	273	327	349	292
Stettler	T	7	1,219	1,295	2,442	3,638	3,988
Stirling	V	2	376	437	520	468	390
Stony Plain	T	11	497	566	878	1,311	1,397
Strathmore	T	5	523	560	704	924	994
Strome	V	7	172	233	276	311	239
Sundre	T	6	-	-	337	853	831
Sunset Point	V	13	-	-	-	14	18
Swan Hills	T	15	-	-	-	643	1,414
Sylvan Lake	T	8	416	805	985	1,381	1,332
Taber	T	2	1,279	1,331	3,042	3,951	4,584
Thorhild	V	13	-	-	248	312	430
Thorsby	V	11	-	-	385	491	583
Three Hills	T	5	581	706	1,026	1,491	1,452
Tilley	V	2	-	193	259	257	250
Tofield	T	10	497	551	692	905	952
Torrington	V	5	-	-	-	-	130
Trochu	T	5	506	480	630	671	780
Turner Valley	V	6	656	676	719	702	625
Two Hills	T	10	149	210	525	826	1,056
Val Quentin	V	13	-	-	-	-	8
Valleyview	T	15	-	-	-	1,077	1,827
Vauxhall	T	2	-	-	393	942	934
Vegreville	T	10	1,659	1,696	2,223	2,908	3,598
Vermilion	T	10	1,270	1,408	1,982	2,449	2,685
Veteran	V	4	180	190	206	239	278
Viking	T	10	492	491	683	1,043	1,146
Vilna	V	12	151	311	378	400	344
Vulcan	T	5	803	732	1,040	1,310	1,505
Wainwright	T	7	1,147	980	1,996	3,351	3,867
Wanham	V	15	-	-	-	251	235
Warburg	V	11	-	-	-	285	407
Warner	V	2	342	296	422	472	446
Warspite	V	12	-	-	-	153	119
Waskatenau	V	12	-	237	239	305	274
Wembley	V	15	183	188	251	303	299
West Cove	V	13	-	-	-	-	6

City (C), Town (T) or Village (V)		Census Division	<u>1931</u>	<u>1941</u>	<u>1951</u>	<u>1961</u>	<u>1966</u>
Westlock	T	13	536	590	1,111	1,838	2,685
Wetaskiwin	C	11	2,125	2,318	3,824	5,300	6,008
Whitecourt	T	14	-	-	-	1,054	2,279
Wildwood	V	14	-	-	405	479	403
Willingdon	V	10	250	420	281	429	419
Yellowstone	V	13	-	-	-	-	3
Youngstown	V	4	372	188	352	321	357



The construction industry now follows mining in net value of production in Alberta.

Table 97

POPULATION BY SPECIFIED AGE GROUPS, FOR CENSUS DIVISIONS AND SELECTED CITIES, ALBERTA, 1966

	Age Groups											
	Total	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-69	70+
Alberta	1,463,203	173,568	179,540	157,658	128,999	102,005	186,681	184,532	145,224	100,986	35,195	68,815
Division No. 1	38,858	4,003	4,430	4,148	3,565	2,286	4,403	4,800	4,584	3,108	1,106	2,425
Division No. 2	82,719	9,064	9,735	9,431	7,995	5,240	9,019	9,816	8,598	6,845	2,468	4,508
Division No. 3	29,592	3,397	3,785	3,614	2,902	1,823	2,869	3,053	3,043	2,416	916	1,774
Division No. 4	14,224	1,611	1,721	1,691	1,284	834	1,456	1,784	1,525	1,058	340	920
Division No. 5	35,987	3,883	4,197	4,179	3,397	2,131	3,513	4,225	4,208	2,980	1,116	2,158
Division No. 6	369,140	43,504	44,677	36,754	29,939	27,089	52,148	50,390	36,147	23,163	8,077	17,252
Division No. 7	40,833	4,523	4,863	4,855	3,888	2,324	4,119	4,657	4,639	3,199	1,102	2,664
Division No. 8	83,912	9,531	10,431	9,440	8,042	5,401	9,653	9,646	8,881	6,375	2,255	4,257
Division No. 9	18,195	1,868	2,003	1,802	1,598	1,313	2,059	2,389	2,046	1,695	557	865
Division No. 10	70,211	7,206	7,701	7,880	6,625	3,835	6,840	7,993	8,430	6,451	2,274	4,976
Division No. 11	476,053	57,511	58,446	49,388	40,961	36,980	66,191	62,788	45,286	29,779	9,972	18,751
Division No. 12	50,635	7,124	7,271	6,269	4,702	3,033	6,189	5,533	4,235	3,089	1,132	2,058
Division No. 13	44,142	4,833	5,291	5,369	4,206	2,178	4,350	5,305	4,696	4,004	1,470	2,440
Division No. 14	20,358	2,768	2,799	2,334	1,663	1,356	2,794	2,475	1,742	1,258	480	689
Division No. 15	88,344	12,742	12,190	10,504	8,232	6,182	11,078	9,678	7,164	5,566	1,930	3,078
Calgary	330,575	39,419	40,052	32,386	26,442	24,897	48,158	45,764	31,755	19,690	6,877	15,135
Edmonton (City)	376,925	45,046	44,619	37,498	32,298	31,754	53,683	49,925	36,090	23,347	7,720	14,945
(Metro)	401,299	48,955	48,839	40,472	34,254	32,845	57,622	53,476	37,569	23,981	7,924	15,362
Grande Prairie	11,417	1,553	1,459	1,220	1,073	981	1,603	1,281	917	582	236	512
Lethbridge	37,186	3,685	3,937	3,881	3,497	2,440	4,096	4,544	4,117	3,223	1,236	2,530
Medicine Hat	25,574	2,544	2,740	2,472	2,338	1,539	2,846	3,074	2,942	2,203	886	1,990
Red Deer	26,171	3,031	3,254	2,845	2,653	2,211	3,620	3,083	2,485	1,500	465	1,024

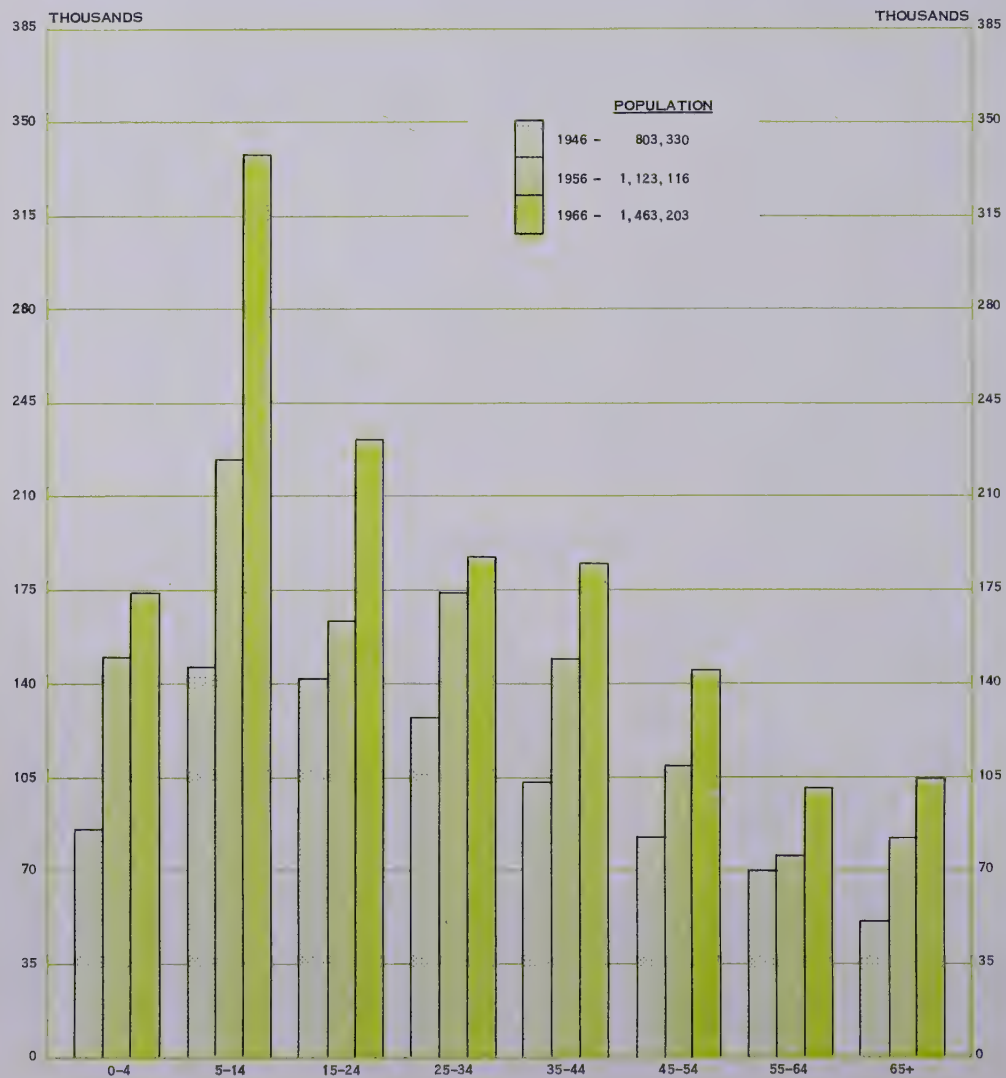


Table 98

POPULATION FOR CENSUS DIVISIONS, URBAN SIZE GROUPS,
RURAL NON-FARM AND RURAL FARM, ALBERTA, 1966

	URBAN								RURAL		
	Total	Total	100,000 and Over	30,000 to 99,999	10,000 to 29,999	5,000 to 9,999	2,500 to 4,999	1,000 to 2,499	Total	Non-farm	Farm
Alberta	1,463,203	1,007,407	711,369	37,186	63,162	40,129	94,068	61,493	455,796	178,198	277,598
Division No. 1	38,858	28,875	-	-	25,574	-	-	3,301	9,983	3,044	6,939
Division No. 2	82,719	50,628	-	37,186	-	-	10,479	2,963	32,091	10,663	21,428
Division No. 3	29,592	12,101	-	-	-	-	10,881	1,220	17,491	6,144	11,347
Division No. 4	14,224	2,633	-	-	-	-	2,633	-	11,591	4,440	7,151
Division No. 5	35,987	6,531	-	-	-	-	3,574	2,957	29,456	14,117	15,339
Division No. 6	369,140	337,399	330,575	-	-	-	2,999	3,825	31,741	13,689	18,052
Division No. 7	40,833	10,273	-	-	-	-	7,855	2,418	30,560	11,383	19,177
Division No. 8	83,912	41,438	-	-	26,171	-	9,987	5,280	42,474	15,991	26,483
Division No. 9	18,195	11,306	-	-	-	-	5,401	5,905	6,889	6,149	740
Division No. 10	70,211	20,614	-	-	-	12,129	6,283	2,202	49,597	14,616	34,981
Division No. 11	476,053	418,183	380,794	-	-	22,083	10,360	4,946	57,870	24,402	33,468
Division No. 12	50,635	18,821	-	-	-	5,917	6,157	6,747	31,614	14,510	17,304
Division No. 13	44,142	7,669	-	-	-	-	5,277	2,592	36,273	10,043	26,230
Division No. 14	20,356	10,374	-	-	-	-	8,095	2,279	9,984	5,177	4,807
Division No. 15	68,344	30,362	-	-	11,417	-	4,087	14,858	57,982	23,830	34,152

Table 99

NUMBER AND AREA OF CENSUS-FARMS AND COMMERCIAL FARMS, 1961 AND 1966,
BY CENSUS DIVISION, ALBERTA

	Census-farms				Commercial farms			
	Number		Area		Number		Area	
	1961 No.	1966 No.	1961 acres	1966 acres	1961 No.	1966 No.	1961 acres	1966 acres
Alberta	73,212	69,411	47,228,653	48,982,875	45,203	48,971	37,241,021	40,986,692
Division No. 1	2,165	2,132	4,222,478	4,145,678	1,850	1,668	3,780,155	3,600,431
Division No. 2	4,735	4,481	4,043,002	4,305,202	3,921	3,787	3,429,665	3,606,585
Division No. 3	2,646	2,496	2,951,319	2,816,571	1,979	1,981	2,345,927	2,340,473
Division No. 4	2,126	1,927	4,935,844	5,069,536	1,725	1,723	4,450,611	4,695,828
Division No. 5	4,333	3,860	3,939,429	3,960,778	3,755	3,556	3,680,949	3,694,673
Division No. 6	4,838	4,581	3,056,530	3,060,170	3,516	3,589	2,720,237	2,833,580
Division No. 7	5,199	4,799	4,434,321	4,440,971	3,910	4,096	3,854,752	4,184,323
Division No. 8	6,551	6,273	2,621,111	2,718,497	4,072	4,549	2,012,453	2,346,015
Division No. 9	175	177	294,041	284,403	74	103	162,752	178,175
Division No. 10	10,188	9,440	4,820,398	4,908,728	6,338	7,139	3,720,674	4,290,010
Division No. 11	8,512	8,395	2,617,538	2,802,269	4,558	5,169	1,739,649	2,107,157
Division No. 12	4,494	4,134	1,867,091	2,108,046	1,905	2,181	993,118	1,333,757
Division No. 13	7,322	6,827	2,723,431	2,864,093	3,378	4,073	1,622,820	2,085,462
Division No. 14	973	1,021	359,975	446,865	230	353	133,166	226,039
Division No. 15	8,955	8,868	4,341,245	5,050,068	3,992	4,624	2,584,093	3,462,184

Table 100

FAMILIES AND NUMBER OF PERSONS PER FAMILY, RURAL AND URBAN, BY CENSUS DIVISION
ALBERTA, 1966

	Families	Persons In Families	Average Number of Persons Per Family	Number of Persons in Family						
				2	3	4	5	6	7	8+
Alberta	331,158	1,291,680	3.9	92,617	63,175	69,664	49,819	28,861	13,660	6,763
Rural	97,906	412,158	4.2	25,111	17,536	18,295	14,547	9,715	5,520	3,176
Farm	60,905	259,934	4.3	13,860	11,343	11,772	9,566	6,425	3,645	2,023
Non-Farm	37,001	152,224	4.1	11,251	6,193	6,523	4,981	3,290	1,875	1,153
Urban	233,252	879,522	3.8	67,506	45,639	51,369	35,272	19,146	8,140	3,587
Division No. 1	9,431	34,844	3.7	2,996	1,844	1,923	1,316	793	325	141
Division No. 2	19,022	74,544	3.9	5,635	3,460	3,705	2,745	1,761	853	432
Division No. 3	6,296	26,458	4.2	1,802	1,079	1,113	849	563	357	204
Division No. 4	3,113	12,630	4.1	814	562	650	476	285	152	93
Division No. 5	8,150	32,136	3.9	2,485	1,429	1,528	1,192	730	352	194
Division No. 6	86,620	323,669	3.7	25,185	17,122	19,481	13,187	6,851	2,822	1,141
Division No. 7	9,105	36,364	4.0	2,646	1,601	1,755	1,343	824	470	242
Division No. 8	18,292	72,308	4.0	5,158	3,344	3,610	2,767	1,746	861	422
Division No. 9	4,182	15,325	3.7	1,452	782	802	546	316	143	76
Division No. 10	16,209	62,346	3.8	4,974	3,020	3,165	2,302	1,364	711	358
Division No. 11	108,570	418,162	3.9	29,402	21,510	24,035	16,803	9,279	4,112	1,899
Division No. 12	10,079	45,537	4.5	2,227	1,661	1,865	1,532	1,075	653	440
Division No. 13	9,905	39,847	4.0	2,822	1,878	1,794	1,366	946	474	293
Division No. 14	4,359	18,079	4.1	1,075	782	875	710	423	229	120
Division No. 15	17,825	79,437	4.5	3,944	3,101	3,363	2,665	1,905	1,146	708

Table 101

POPULATION BY RACIAL ORIGIN FOR CENSUS DIVISIONS

										Other Europ-
Census Divisions	Total	British Isles Origins ¹ .	French	Austrian N. O. S.	Czech and Slovak	Finnish	German	Hungarian	Italian	Jewish
1	39,140	14,138	952	279	205	52	14,029	320	290	119
2	83,306	32,821	1,901	835	2,676	169	12,865	3,603	1,389	148
3	30,967	15,207	1,148	153	275	46	3,740	269	175	7
4	15,020	7,070	397	79	92	12	3,360	54	13	1
5	38,115	17,719	1,392	274	445	120	6,377	544	416	50
6	317,989	183,340	12,473	3,173	2,139	601	37,638	4,710	5,133	1,882
7	40,837	20,052	1,871	295	292	31	8,199	222	76	2
8	76,533	41,923	2,850	406	568	1,081	9,423	640	345	37
9	20,274	8,828	793	281	1,105	99	1,503	313	1,337	9
10	70,177	21,880	1,979	1,459	432	24	7,755	285	62	101
11	410,679	180,568	28,836	6,581	2,571	894	57,912	3,292	4,894	1,944
12	47,310	9,984	11,642	532	280	116	2,030	106	281	14
13	45,431	14,414	3,792	564	608	244	7,644	298	201	2
14	19,282	7,819	1,708	170	173	67	2,831	114	212	20
15	76,884	26,012	11,585	823	587	106	8,008	523	201	17
Alberta Total	1,331,944	601,755	83,319	15,904	12,448	3,662	183,314	15,293	15,025	4,353
Percent of Total	100.0	45.18	6.26	1.19	.93	.28	13.76	1.15	1.13	.33

(1) Includes English, Irish, Scottish, Welsh and Manx.

Table 102

POPULATION BY OFFICIAL LANGUAGE AND MOTHER TONGUE FOR ALBERTA RURAL

	Total	Official Language				English	French	Chinese	Finnish	Gaelic
		English Only	French Only	English and French	Neither English nor French					
Alberta Total	1,331,944	1,253,824	5,534	56,920	15,666	962,319	42,276	5,774	1,905	463
Rural	488,733	454,171	3,481	22,151	8,930	315,948	21,026	581	1,038	131
Farm	285,823	267,356	2,331	12,573	3,563	180,317	12,916	59	687	72
Non-Farm	202,910	186,815	1,150	9,578	5,367	135,631	8,110	522	351	59
Urban	843,211	799,653	2,053	34,769	6,736	646,371	21,250	5,193	867	332
100,000 & Over	605,342	573,401	1,315	25,693	4,933	462,658	14,569	3,526	579	226
30,000-99,000	35,454	34,390	24	647	393	27,239	256	264	24	12
10,000-29,999	44,096	42,987	40	809	260	33,894	448	356	53	28
5,000- 9,999	23,535	22,769	49	609	108	18,206	436	191	17	6
2,500- 4,999	62,843	58,539	353	3,374	577	47,752	2,657	413	39	37
1,000- 2,499	71,941	67,567	272	3,637	465	56,582	2,884	443	155	23
Division No. 1	39,140	38,325	32	515	268	26,759	254	176	36	16
2	83,306	80,765	54	1,231	1,256	57,213	539	452	73	23
3	30,967	29,972	38	573	384	22,883	378	91	14	7
4	15,020	14,786	11	189	34	11,894	104	57	7	1
5	38,115	36,972	67	759	317	29,004	540	165	66	7
6	317,989	305,664	413	9,841	2,071	262,691	4,001	2,026	231	90
7	40,837	39,714	83	955	85	34,158	751	106	16	12
8	76,533	74,673	75	1,286	499	64,370	791	300	672	38
9	20,274	19,022	37	844	371	14,173	370	129	42	8
10	70,177	67,685	81	1,057	1,354	40,043	751	166	15	32
11	410,679	384,166	1,447	21,405	3,661	291,354	15,243	1,694	452	172
12	47,310	35,241	1,323	8,368	2,378	19,327	8,564	105	76	6
13	45,431	42,535	147	2,043	706	27,899	1,720	58	141	22
14	19,282	18,063	109	900	210	14,055	735	39	33	8
15	76,884	66,241	1,617	6,954	2,072	46,496	7,535	210	31	21

AND INCORPORATED CITIES OF 10,000 AND OVER - ALBERTA, 1961

European Origins						Asiatic Origins			Other Origins		
Nether-lands	Polish	Russian	Scandin-avian ²	Ukrain-ian	Other	Chinese	Japanese	Other	Indian and Eskimo	Negro	Other & Not Stated
1,329	745	1,791	2,295	665	998	193	87	31	49	3	570
7,131	1,958	1,475	6,572	2,494	2,448	620	2,601	45	665	4	886
1,199	337	817	2,820	340	322	109	101	7	3,789	4	102
345	517	612	1,507	523	254	70	5	21	39	-	49
1,994	713	903	3,787	872	542	202	16	14	1,548	7	180
13,098	6,169	5,018	19,193	8,511	5,659	2,407	492	485	976	327	4,565
1,156	870	618	5,167	1,005	651	114	-	8	33	2	173
3,871	1,135	818	8,225	1,543	1,165	358	25	23	1,460	29	608
470	988	257	995	849	622	151	41	16	1,381	1	235
1,370	3,615	494	8,583	20,332	1,104	182	13	8	137	12	350
16,140	15,419	3,651	23,810	43,601	8,107	2,070	298	862	3,701	643	4,885
447	1,975	232	1,978	10,849	590	119	3	228	5,547	17	360
1,576	3,001	341	2,902	7,540	725	65	15	26	1,055	202	216
905	714	244	1,651	1,520	632	41	17	31	215	48	150
4,499	2,383	681	6,394	5,279	1,148	236	7	40	7,959	8	388
55,530	40,539	17,952	95,879	105,923	24,967	6,937	3,721	1,845	28,554	1,307	13,717
4.17	3.04	1.35	7.20	7.95	1.87	.52	.28	.14	2.14	.10	1.03
8,682	5,106	3,584	13,983	7,075	4,621	2,232	456	445	335	233	3,759
9,953	11,197	2,276	14,526	32,526	5,891	1,805	230	712	995	491	3,568
761	417	324	788	487	284	35	11	4	16	29	170
1,879	899	334	2,112	2,437	494	97	18	67	140	75	466
1,837	1,037	448	2,165	1,358	1,035	413	838	33	22	2	719
659	415	869	1,066	478	559	171	36	30	15	3	456
1,094	300	170	1,666	634	297	214	6	7	49	4	310

(2) Includes Danish, Icelandic, Norwegian and Swedish.

FARM, RURAL NON-FARM AND URBAN BY SIZE GROUPS AND FOR CENSUS DIVISIONS, 1961

Mother Tongue												
German	Indian and Eskimo	Italian	Japanese	Magyar	Nether-lands	Polish	Russian	Scandin-avian	Slovak	Ukrain-ian	Yiddish	Other
97,666	27,928	9,881	2,108	9,397	24,640	16,755	3,675	25,603	5,725	83,923	1,764	10,142
40,411	26,230	1,146	903	2,840	7,898	6,871	1,313	12,207	2,782	44,330	154	2,924
30,327	5,026	456	572	1,739	5,207	4,696	800	7,861	1,786	31,430	77	1,795
10,084	21,204	690	331	1,101	2,691	2,175	513	4,346	996	12,900	77	1,129
57,255	1,698	8,735	1,205	6,557	16,742	9,884	2,362	13,396	2,943	39,593	1,610	7,218
39,150	962	6,991	355	4,734	12,644	7,446	1,789	8,892	1,598	32,163	1,458	5,562
1,576	10	572	510	938	1,043	565	132	401	523	924	52	413
6,312	26	168	22	155	901	206	88	597	99	533	28	182
1,820	46	47	3	87	314	250	71	1,296	35	620	8	82
4,558	129	274	203	380	947	543	102	993	204	3,073	33	506
3,839	525	683	112	263	893	874	180	1,217	484	2,280	31	473
9,311	37	147	47	159	648	238	95	523	111	372	24	187
9,013	547	842	1,587	2,437	3,509	1,090	274	1,380	1,595	1,675	72	985
2,168	3,683	76	33	111	459	141	127	447	120	158	3	68
1,873	30	4	2	20	65	178	42	390	22	281	4	46
2,956	1,497	203	12	353	787	287	189	1,027	195	657	20	150
18,314	526	3,506	235	3,218	5,883	2,410	1,069	5,057	817	4,676	777	2,462
2,733	23	30	-	62	234	301	66	1,561	50	575	5	154
2,994	1,363	144	13	237	1,674	336	145	2,132	151	771	13	389
683	1,365	783	13	181	216	544	136	259	533	533	11	295
3,758	129	40	9	93	285	1,280	123	2,804	160	19,866	46	577
32,853	2,852	3,662	140	2,020	8,829	6,303	988	6,500	1,063	32,166	716	3,672
617	6,319	139	3	42	76	941	67	448	118	10,039	32	391
4,080	1,057	87	9	129	551	1,421	88	746	332	6,868	12	211
1,269	203	113	5	67	439	267	89	417	141	1,148	14	240
5,044	8,297	105	-	268	985	1,018	177	1,912	317	4,138	15	315

Table 103

BIRTHPLACE OF ALBERTA POPULATION BY CENSUS DIVISION - 1961

	New- found- land	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Sask- atchewan	Alberta	British Columbia	Yukon & Northwest Territories	Total Canada
Census Division 1	24	56	212	100	140	1,045	865	5,280	21,971	484	16	30,193
Percent of Total	0.06	0.14	0.54	0.26	0.36	2.67	2.21	13.49	56.13	1.24	0.04	77.14
Census Division 2	49	66	371	166	312	2,051	1,657	6,174	47,287	2,147	31	60,311
Percent of Total	0.06	0.08	0.45	0.20	0.37	2.45	1.99	7.41	56.76	2.58	0.04	72.40
Census Division 3	7	45	156	64	141	853	403	1,439	22,330	511	10	25,959
Percent of Total	0.02	0.15	0.39	0.21	0.46	2.75	1.30	4.85	72.11	1.05	0.03	83.83
Census Division 4	5	21	54	27	64	550	245	1,369	9,731	147	5	12,218
Percent of Total	0.03	0.14	0.36	0.18	0.43	3.66	1.63	9.11	64.79	0.98	0.03	81.34
Census Division 5	15	66	220	86	208	1,188	738	2,102	24,965	532	14	30,134
Percent of Total	0.04	0.17	0.58	0.23	0.54	3.12	1.94	8.51	65.50	1.39	0.04	78.06
Census Division 6	474	910	3,146	1,722	3,466	18,377	13,516	30,957	159,273	9,842	221	241,904
Percent of Total	0.15	0.29	0.99	0.54	1.09	5.78	4.25	9.73	50.09	3.09	0.07	76.07
Census Division 7	14	72	190	126	309	1,657	618	2,589	27,477	459	21	33,532
Percent of Total	0.03	0.18	0.47	0.31	0.76	4.06	1.81	8.34	67.28	1.12	0.05	82.11
Census Division 8	55	122	398	234	452	3,042	1,886	5,285	49,143	1,601	47	62,075
Percent of Total	0.07	0.16	0.52	0.31	0.59	3.98	2.40	6.92	64.21	2.09	0.06	81.11
Census Division 9	23	36	288	108	205	696	590	1,217	10,986	794	14	14,957
Percent of Total	0.11	0.18	1.42	0.53	1.01	3.43	2.91	6.00	54.19	3.92	0.07	73.77
Census Division 10	12	55	205	66	288	1,603	843	6,012	47,010	567	18	56,679
Percent of Total	0.02	0.08	0.29	0.09	0.41	2.28	1.20	8.57	66.99	0.81	0.03	80.77
Census Division 11	448	731	2,743	1,528	4,561	16,666	13,060	28,905	240,651	8,424	801	318,519
Percent of Total	0.11	0.18	0.87	0.37	1.11	4.06	3.18	7.04	56.60	2.05	0.19	77.56
Census Division 12	63	70	389	297	1,497	1,595	646	2,105	33,357	790	134	40,943
Percent of Total	0.13	0.15	0.82	0.63	3.16	3.37	1.37	4.45	70.51	1.67	0.28	86.54
Census Division 13	17	62	136	62	353	977	477	1,503	30,938	462	26	35,013
Percent of Total	0.04	0.14	0.30	0.15	0.78	2.15	1.05	3.31	68.10	1.01	0.06	77.07
Census Division 14	17	31	93	78	296	683	453	1,800	11,185	577	13	15,236
Percent of Total	0.09	0.16	0.48	0.40	1.54	3.54	2.35	9.33	58.01	2.99	0.07	78.96
Census Division 15	20	68	261	202	1,915	1,931	2,116	5,450	51,730	1,737	102	65,532
Percent of Total	0.03	0.09	0.34	0.26	2.49	2.81	2.75	7.09	67.28	2.26	0.13	85.23
Alberta Total	1,243	2,411	8,862	4,867	14,207	52,914	37,913	102,197	788,034	29,074	1,473	1,043,195
Percent of Total	0.09	0.18	0.67	0.37	1.07	3.97	2.85	7.67	59.16	2.16	0.11	78.32

	United Kingdom	Other British Commonwealth Countries	United States	European Countries	Asiatic Countries	Other Countries	Total
Census Division 1	1,917	30	1,928	4,883	155	34	39,140
Percent of Total	4.80	0.08	4.52	12.47	0.40	0.09	100 %
Census Division 2	3,943	154	4,329	13,545	910	114	83,306
Percent of Total	4.73	0.18	5.20	16.26	1.09	0.14	100 %
Census Division 3	1,088	42	2,152	1,630	91	5	30,867
Percent of Total	3.51	0.14	6.95	5.26	0.29	0.02	100 %
Census Division 4	695	19	926	1,108	46	8	15,020
Percent of Total	4.63	0.13	6.16	7.38	0.31	0.05	100 %
Census Division 5	1,830	59	2,582	3,320	165	25	38,115
Percent of Total	4.80	0.16	6.78	8.71	0.43	0.06	100 %
Census Division 6	26,455	937	12,433	34,095	1,880	285	317,989
Percent of Total	8.32	0.30	3.91	10.72	0.59	0.09	100 %
Census Division 7	2,006	45	2,588	2,576	84	6	40,837
Percent of Total	4.91	0.11	6.34	6.31	0.21	0.01	100 %
Census Division 8	4,213	107	4,243	5,616	242	37	76,533
Percent of Total	5.20	0.14	5.54	7.34	0.32	0.05	100 %
Census Division 9	1,495	74	564	3,058	116	10	20,274
Percent of Total	7.37	0.37	2.78	15.09	0.57	0.05	100 %
Census Division 10	2,516	44	2,749	8,017	138	34	70,177
Percent of Total	3.58	0.06	3.92	11.42	0.20	0.05	100 %
Census Division 11	24,527	878	10,747	53,917	1,840	251	410,679
Percent of Total	5.87	0.21	2.62	13.13	0.45	0.06	100 %
Census Division 12	916	47	1,079	4,120	191	14	47,310
Percent of Total	1.84	0.10	2.28	8.71	0.40	0.03	100 %
Census Division 13	1,634	28	1,879	6,802	62	13	45,431
Percent of Total	3.60	0.06	4.13	14.87	0.14	0.03	100 %
Census Division 14	753	34	648	2,571	31	19	19,282
Percent of Total	3.91	0.18	3.36	13.33	0.16	0.10	100 %
Census Division 15	2,136	69	2,653	6,139	169	186	76,884
Percent of Total	2.78	0.09	3.45	7.89	0.22	0.24	100 %
Alberta Total	76,124	2,567	51,500	151,397	6,120	1,041	1,331,944
Percent of Total	5.71	0.19	3.67	11.37	0.46	0.08	100 %

Table 104

POPULATION, RELIGIOUS DENOMINATIONS, BY CENSUS DIVISIONS, ALBERTA, 1961

Census Divisions	Anglican Church of Canada			Baptist			Christian Reformed			Christian Science			Church of Christ Disciples			Confucian and Buddhist			Evangelical United Brethren			Jehovah's Witnesses			Jewish			Lutheran			Mennonite			Mormon			Pentecostal			Presbyterian			Roman Catholic			Salvation Army			Ukrainian (Greek) Catholic			Other			Total																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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Table 105

LABOUR FORCE 15 YEARS OF AGE AND OVER - BY MAJOR OCCUPATION GROUP,
ALBERTA, 1951 AND 1961 AND FOR CENSUS DIVISIONS, 1961

	All Occupations	Managerial	Professional & Technical	Clerical	Sales	Service and Recreational Occupations	Transportation and Communication	Farmers and Farm Workers	Loggers, Fish- ermen, Trappers and Hunters	Miners, Quarry- men & Related Workers	Craftsmen, Production, Process & Related Workers *	Occupation Not Stated	
Alberta 1951	353,497	28,350	23,874	30,361	18,496	34,895	19,829	114,926	2,303	7,469	54,177	16,771	2,046
Alberta 1961	489,511	41,691	46,579	55,317	31,629	59,055	28,261	104,162	3,009	5,291	83,449	19,615	11,453
Census Division													
1	13,540	1,100	1,247	1,119	829	1,407	902	3,066	6	43	2,914	583	324
2	30,065	2,494	2,690	2,425	2,070	2,882	1,607	9,183	13	157	4,685	1,229	630
3	9,806	702	757	424	417	928	454	3,823	19	144	1,434	389	315
4	5,275	326	313	193	189	373	266	2,791	-	46	556	106	116
5	13,054	879	857	539	498	943	512	6,324	1	375	1,588	255	283
6	122,507	12,865	13,982	20,499	10,262	17,064	7,772	7,580	79	717	23,497	5,180	3,010
7	14,097	954	886	613	563	1,282	606	6,849	2	197	1,551	310	284
8	26,125	1,999	2,155	1,555	1,397	3,444	1,289	8,598	73	490	3,653	948	524
9	8,291	688	618	669	339	1,538	685	416	307	588	1,600	668	175
10	25,904	1,610	1,627	995	994	1,705	945	14,271	14	127	2,567	606	443
11	156,267	14,237	17,621	23,873	11,984	21,371	10,446	12,314	129	1,630	31,903	6,979	3,780
12	15,728	728	955	489	374	2,742	535	7,256	356	18	1,375	446	454
13	17,086	886	788	445	452	806	595	10,436	129	179	1,586	503	281
14	6,716	549	447	379	237	667	480	980	679	225	1,411	487	175
15	25,050	1,674	1,636	1,100	1,024	1,903	1,167	10,275	1,202	355	3,129	926	659

* Note: 1951 and 1961 data are not strictly comparable for craftsmen, production process and related workers, and for labourers.

Table 106

LABOUR FORCE 15 YEARS OF AGE AND OVER BY INDUSTRY - ALBERTA 1951 and 1961; AND FOR MAJOR CITIES 1961

	Alberta		Calgary	Edmonton	Lethbridge	Medicine Hat	Red Deer	Others
	1951	1961	1961	1961	1961	1961	1961	1961
Agriculture	114,918	103,573	998	1,346	459	389	66	100,315
Forestry	1,709	2,784	76	129	4	1	7	2,567
Fishing and Trapping	974	839	12	23	1	1	-	802
Mines, Quarries and Oil Wells	15,723	17,350	6,942	2,839	90	54	248	7,177
Manufacturing	29,015	42,217	13,064	17,477	1,541	1,652	514	7,969
Construction	23,641	37,360	10,613	12,442	1,060	710	703	11,832
Transportation	29,956	42,809	10,734	13,392	1,418	961	577	15,727
Public Utilities	2,396	4,626	1,468	1,257	155	83	48	1,615
Trade	51,943	80,096	23,846	27,710	3,414	1,574	1,504	22,048
Finance, Insurance and Real Estate	7,957	14,695	5,566	5,467	551	269	282	2,560
(Non-Government Services) Community, Business, Personal Service	50,810	93,424	23,454	31,067	3,429	2,020	2,239	31,215
(Government Services) Public Administration	22,118	38,627	9,786	15,211	1,036	620	753	11,221
Industry - Unspecified or Undefined	2,337	11,111	2,697	3,216	296	214	183	4,505
TOTAL	353,497	489,511	109,256	131,576	13,454	8,548	7,124	219,553

Table 107

WAGE-EARNERS, 15 YEARS OF AGE AND OVER SHOWING TOTAL WAGE-EARNERS AND THE NUMBER OF WAGE-EARNERS BY AMOUNT OF EARNINGS, ALBERTA AND CENSUS DIVISIONS, 1961

		Number of Wage-Earners Working for Wages or Salary, and Reporting Earnings by Income Groups					
Total Wage-Earners*		-\$1,000	\$1,000-\$1,999	\$2,000-\$2,999	\$3,000-\$3,999	\$4,000-\$5,999	\$6,000+
No.		No.	No.	No.	No.	No.	No.
Alberta	362,794	52,379	47,737	59,952	70,609	78,116	34,017
Census Division							
1	10,049	1,426	1,502	1,670	2,322	1,896	593
2	21,691	3,919	3,576	4,059	3,800	3,669	1,205
3	6,319	1,177	1,060	1,003	973	924	340
4	2,640	552	513	396	427	394	111
5	7,212	1,443	1,465	1,191	1,208	903	263
6	106,959	12,617	11,775	17,033	21,703	26,049	12,765
7	6,947	1,329	1,322	1,095	1,237	1,148	335
8	16,155	2,620	2,344	3,069	3,203	3,054	1,088
9	7,367	1,241	1,020	1,137	1,586	1,563	520
10	10,653	2,084	1,944	1,823	1,897	1,560	478
11	134,299	17,516	15,849	22,162	26,827	31,156	14,490
12	8,013	1,543	1,138	1,320	1,296	1,633	414
13	6,003	1,410	1,136	965	899	883	277
14	5,147	747	743	781	955	1,199	499
15	13,340	2,755	2,350	2,248	2,276	2,085	639

* Total wage-earners includes persons working for wages or salary and/or persons paid income in kind. These figures do not include own-account earners, e.g. farmers, professional people, and owners of business enterprises.
The figures do include those who worked only part-time or for short periods.

